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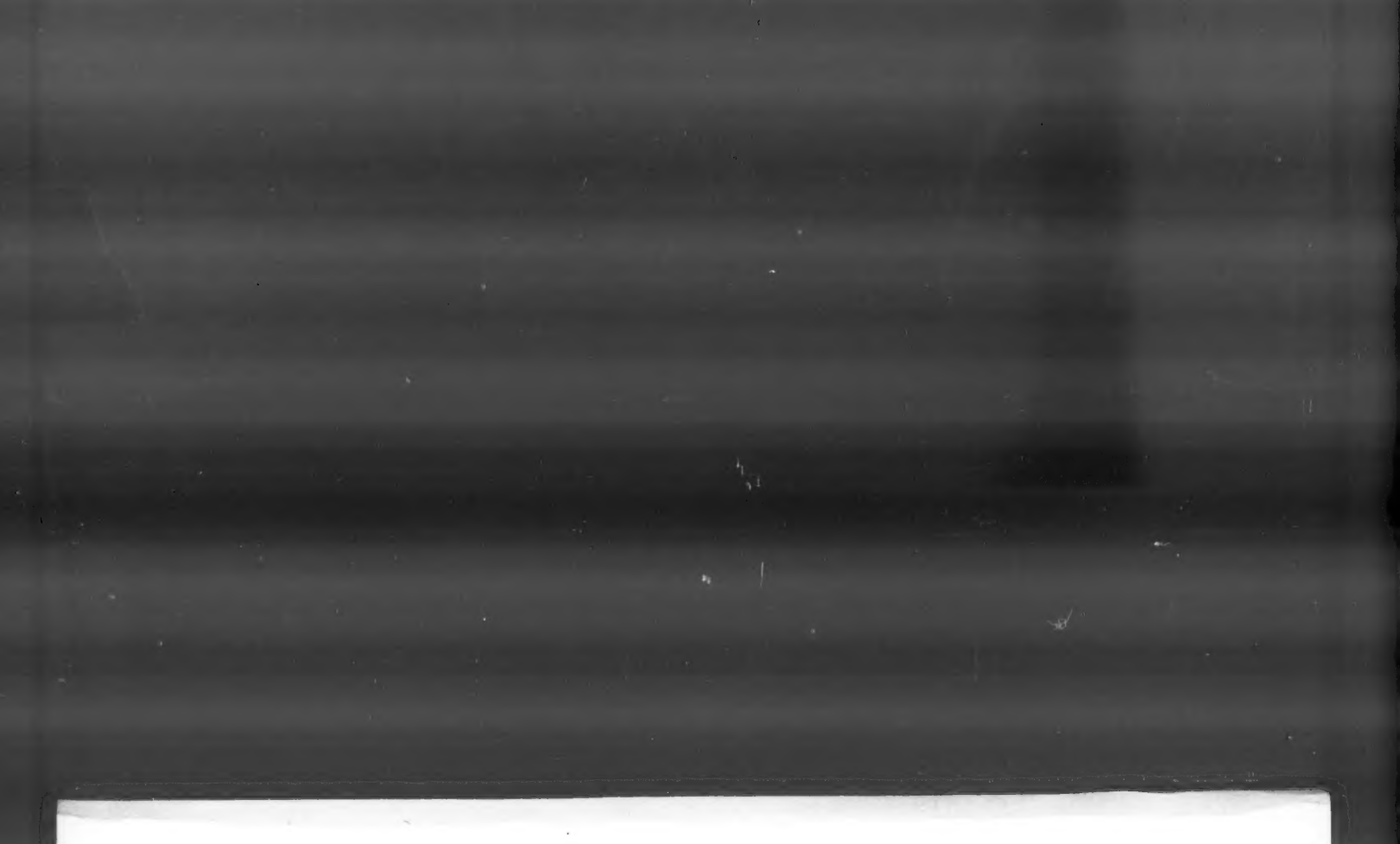

THE

QUARTERLY JOURNAL

OF

ECONOMICS

MAY, 1922

INTERNATIONAL TRADE UNDER INCONVERTIBLE PAPER

SUMMARY

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I

THE outstanding difference between international trade under the gold standard and under inconvertible paper lies in the comparative instability of the foreign exchange mechanism under a paper régime. Where gold is the basis of the monetary systems in the trading countries a single fixed parity, determined by the numerical ratio between the physical weights of the units of

the various currencies, is definitely established; there is a universally acceptable medium of exchange and standard of value; and a positive mechanism develops, which tends always to prevent any very wide fluctuations of the exchange rates. Under inconvertible paper, on the other hand, there is no permanent parity, no mechanism which will necessarily and invariably correct movements of the exchanges. Large variations, both in exchange rates and in international prices, therefore become possible. Gold will of course move between countries, but only as a commodity: it cannot enter the legal tender currency, and the stabilizing effect of the gold flow mechanism is absent.

Nevertheless the general mechanisms of international trade, presumably appearing under paper, and the nature of the relationships prevailing between international trade and more purely domestic phenomena, are in many respects closely analogous to the conditions characteristic of trade under gold. The purpose of this paper is to attempt an examination of these mechanisms and relationships; an examination, it may be added, which proceeds from the view that the monetary situation presented by the existence of inconvertible paper as the basis of the monetary system is not necessarily a mere transition stage between the temporary surrender of the gold standard and an ultimate return to that standard, but may itself be a normal and permanent condition. It may also be remarked that the situation created by this abstraction of gold, while at first glance somewhat unreal, is in point of fact similar in many respects to that actually prevailing in Europe from 1914 to 1919, altho no direct investigation of this latter situation can be attempted here.

Recent discussions relevant to the problem of international trade under paper fall into three main groups.

The first includes the incidental and rather summary treatments presented in various general works on international trade or on monetary theory, and may be passed by without further notice here. Despite their many profitable suggestions and interesting points of view, no systematic treatment of the problem as a whole is attempted in any one of them.[1] The second has to do with the question of the trade between an inconvertible paper and a gold standard country; and while the resulting data and conclusions, especially those dealing with relative price movements, are important and valuable for the light they cast on our problem this group of writings, as a whole, does not concern us directly: it is occupied with a related but different question.[2] Like the first group, it may be neglected here except for incidental reference later. Finally, there remains the body of discussion centering around the purchasing-power-parity doctrine. This doctrine, and the controversy to which it has given rise, presents the only important systematic attempt that has heretofore been made to solve the problem of foreign trade under the rigid paper hypothesis, and it therefore requires somewhat more detailed attention.

The doctrine was first advanced by the Swedish economist Cassel, in the *Economic Journal* for 1916, and was elaborated by him in subsequent years. It has

1. The reader is referred especially to M. Bourguin, La Mesure de la Valeur (Paris, 1890), pp. 177 and following, for a brief but illuminating discussion of the parity of exchange under paper; and to R. G. Hawtrey, Currency and Credit (London, 1919), for a novel and suggestive approach to the general monetary aspects of international trade.

2. The problem was first considered deductively by Professor Taussig in the Quarterly Journal of Economics for May, 1917, and later by Professor Hollander. A successful attempt to verify Professor Taussig's theoretical conclusions has recently been made by Dr. Graham (F. D. Graham, International Trade of the United States, 1862–79. Unpublished Ph.D. thesis, dated 1919, now in the Harvard University Library). Graham drew much of his statistical material from W. C. Mitchell's History of the Greenbacks (Chicago, 1903). See also J. H. Williams, Argentine International Trade (Cambridge, 1920).

gained wide tho by no means unanimous support, both in Europe and in this country. Cassel's earlier and more tentative statement was somewhat as follows. The rate of exchange is primarily an expression for the value, in the money of one country, put upon the money of another country.[3] Hence the rate of exchange is determined by the quotient of the general levels of prices in the two countries; and if the quantity theory of money be accepted, as it is by Cassel, this means that the rate is determined by the relative quantities of the respective circulating media. From this it follows, finally, that the rate is "governed essentially by the degree of inflation in the different monetary systems. All other factors, such as the balance of trade and the confidence of the world in this or that country, have only a quite secondary and temporary importance."[4] In 1918, Cassel elaborated this idea, and declared that "the rate of exchange is primarily determined by the purchasing powers against goods, of the money of each country.... At every moment the real parity between two countries is represented by this quotient in the one country and the other."[5] This parity is the "purchasing-power-parity."

Later he qualified this view somewhat,[6] and found that altho a permanent deviation from the parity will arise only from a change in general price levels, temporary deviations can nevertheless occur. Such deviations may be due to restrictions on trade which are greater in one direction than in the other, as from tariffs, to distrust of the future of a given monetary standard, to the export of capital, to the failure of export prices to reflect the general price level closely, and so forth. But in Cassel's view these deviations will soon

3. Economic Journal, 1916, p. 62.
4. Ibid., pp. 64, 65.
5. Ibid., 1918, p. 413.
6. Annals, American Academy of Political and Social Science, May, 1920, p. 262.

be corrected, and will not affect the permanent purchasing-power-parity.

A detailed criticism of this interesting doctrine, which seems to me quite untenable, is impossible within the limits assigned to this paper. I shall simply state my objections briefly, without attempting any comprehensive proof. In the first place Cassel's qualifications, which are far more extensive now than they were in 1916, deprive the doctrine of much of its original force and novelty. Second, his rejection of the balance of trade, of loans, and of similar forces, as primary and permanent determinants of the movement of exchange rates, is hardly justifiable. Third, his neglect of money incomes — which are often themselves causes of changes in the prices of international goods, not merely dependent on such prices — is at least open to serious question. Finally, and most important of all, his reliance upon the nebulous "general price level" as the determinant of exchange rates involves an assumption true only in a static condition of trade: that the prices of international commodities and those of commodities in general move together in such close relationship that a comparison of general purchasing powers as between countries can be taken to have real significance for the purposes of international trade. But the ordinary situation is dynamic rather than static, changing rather than fixed; and the investigations of Professor Graham, Professor Williams, and others give adequate statistical support to the theoretical conclusion that in times of change international prices, as quoted in an inconvertible paper country, can and do move for many months quite without any necessarily direct and predictable relation to purely domestic prices, or to the so-called general price level.[7] Insofar as

7. A similar conclusion can legitimately be drawn, I think, from Mitchell, altho he does not go into this problem specifically. Op. cit., Part II, chap. 5, and especially pp. 272–275.

this is true, the purchasing-power-parity doctrine, which is essentially dependent on the indiscriminate jumbling-together of international and domestic prices into a composite general price level, cannot be regarded as valid during periods of transition. Domestic and international price levels, under dynamic conditions, obviously do not and cannot move in harmony, nor can the general price level accurately reflect either. Indeed, to anticipate some of the conclusions of the later discussion, exchange rates and the parity are under paper proximately determined, not by general purchasing powers or general price levels at all, but by the prices and quantities of media of international payment: the influence of purely domestic commodity prices is distinctly secondary. Furthermore, important changes may take place in domestic prices (and possibly in international prices also) without necessarily affecting the exchange rates, but all such changes will of course be reflected in the general price level, and will therefore alter the purchasing-power-parity. The latter hence fails to give a true picture of the international situation under dynamic conditions, and becomes merely misleading.

II

It therefore seems to me that a somewhat different method of attack on the general problem of international trade under inconvertible paper is necessary. The method proposed, which is presented in the following pages, centers around an attempt to examine the nature and the operation of the specific mechanisms actually or presumably involved. It lays no claims to completeness, and the conclusions drawn from it are to be regarded not as statements of proved or even of probable fact, but rather as suggestions for the guidance of further and

more definitive investigations. Nor has any statistical verification of the particular views here advanced been attempted: I have had neither the time nor the data for an inductive study.[8] I shall begin by setting up certain assumptions, designed to remove unnecessary complexities from the analysis. They are, first, the abstraction of gold in conformity with the rigid paper hypothesis; second, trade between only two countries, A and B, with no others affecting their relations; third, fixed quantities of paper currency in each country; and fourth, fairly complete competition in and between the two countries. The qualifications which these assumptions will make logically necessary in the conclusions of the later discussion are fairly obvious, and for the sake of brevity no systematic attempt will be made to remind the reader of them at each step. They do not of themselves impair the validity of the results obtained, altho they may admittedly obscure or delay the appearance of those results.

To these assumptions must be added the further statement that the whole field of the so-called "invisible items" is deliberately avoided here as far as possible, either by the method of isolation of effects or by assigning them a negative and dependent rôle: our primary concern is with the commodity field. While the argument will necessarily lose something of the appearance of reality by this abstraction, it gains in simplicity, and it does not seem to me that its substantive results are materially altered. If one country has a balance to pay to another it may make part of its payments in the form of invisible items as distinct from commodities, but this fact, while it may either exaggerate or diminish the amount of the change in the commodity situation, will

8. Extant statistics on the movements of war prices, for example, are as yet incomplete, and they do not make such a separation of the various kinds of prices as is essential to a study of the type here outlined.

not alter its qualitative character. The dominant and determinant factor in international trade, unless it be in the case of new countries financing their economic development abroad, will of necessity continue to be commodity transactions. And even where international borrowings are the controlling influence, such borrowings are from the point of view of international trade resolvable into two processes, one of lending and one of repayment, both of which will in the absence of gold be conducted primarily in terms of goods. Finally, the major part of the transactions in the invisible items field will at some stage in their life history enter the foreign exchange market, and their *proximate* effect there will be substantially the same, for the purposes of the later analysis, as that of commodities. The lack of any attempt here to examine the mechanism of international borrowing is therefore justifiable.

The discussion presented in the following pages may be divided into three principal sections: first, an analysis of the proximate mechanisms and tendencies governing the foreign exchange market in the "short-time" period; second, an examination of the nature of the immediate relationships between international commodity prices and movements, and the exchange rates, in the "transitional" period; and third, a somewhat more cursory investigation of certain long-run aspects of the general problem. It is proposed to proceed primarily by the method of isolation; to make the foreign exchange market the starting point, and to trace the probable subsequent effects of an important disturbance in that market were the effects of other and later disturbances to be ignored. From this point of view the division into time periods just suggested is not as arbitrary as it may at first seem, for it is obviously permissible to separate the events in the life history of a single given disturbance into two or more phases.

In the present section we are concerned with "short-time" phenomena, and a definition of the short-time period alone is here necessary; the definition of the "transitional" and the "long-run" periods may be left for the two later sections which are given to their study. By short-time is meant a period so brief that the underlying conditions which ultimately determine the course of international trade — commodity demand and supply schedules in each country, the "invisible items" (shipping charges, permanent foreign investment, and so on), and similar forces — do not undergo any material change, and can be regarded as substantially constant. For the purposes of the analysis of short-time mechanisms immediately following, a period of a few days is long enough, and the assumption of substantial stability in this period is therefore tenable. No important change in the determinant conditions will occur in this brief time. (The question of the probable duration of that stability under the conditions of actual trade is reserved for treatment elsewhere.) It may also be observed that the foreign exchange market, which is in large measure, of course, ultimately dependent on and governed by the commodity market, has in this short-run period an independent existence prior to the commodity market. As will appear more clearly later, commodity prices proximately follow instead of determine the prices of bills.

With these assumptions and definitions as the basis, we can now turn to our first principal problem, the analysis of the mechanisms governing the operation of the foreign exchange market in a given short-time period. This analysis will deal with four questions, to be taken up in order: first, the nature of the principal media of international payment; second, the mechanism of the exchange market within any given country, and the

character of the equilibrium tendencies appearing there; third, the proximate determination of the exchange rate; and fourth, the probable nature of the par of exchange under paper.

The principal media of international payment available under inconvertible paper may be arranged, in the order of the sensitivity of their movements in response to changes in the exchange rates, somewhat as follows: commodity bills, bankers' drafts, and cable transfers; short-time borrowings between banks (finance bills, etc.); those short- and long-time securities, the international movements of which are sensitive to changes in discount and exchange rates; various "international" commodities for which there is an open market (especially, under the paper hypothesis, gold in its capacity as a commodity); and so on.[9] The wider and more lasting the fluctuations of the rates, the farther into the series will their disturbing effects tend to penetrate. The prices of these media, their values in terms of the money of the one country or the other, are, of course, determined at the time they are credited to the account of the one country, and charged against the account of the other—for commodity bills, for example, at the time the banker mails the bills to the other country for collection. Once this process has been performed, the given media pass out of the exchange market proper, and do not reenter it. They still affect the commodity market, of course, but this question belongs to another part of the discussion.

Given an exchange market in either country into which all these different media of payment enter, is it possible to establish any general relationships between the prices and quantities of the media in the short-time

9. For this suggestion I am indebted to Professor Allyn A. Young of Harvard University. I owe him thanks, also, for invaluable constructive criticism throughout the paper.

period, and to set up any general rule for the determination of the exchange rate? As far as any given bill or draft is concerned, the rate of exchange is obviously nothing more than the numerical ratio between the price of that bill in the money of the one country and its price in the money of the other; between the amount of money that is given for it in the country of origin and the amount of money it will command when presented for collection or payment in the other country. But what happens when a large number of such bills and drafts are being offered or demanded simultaneously? Let us begin by assuming for the moment that commodity bills and bankers' drafts are the only media of international payment being employed. The international bankers of any given country, as A, are on any given day handling two sets of bills and drafts. One consists of the bills and drafts originally drawn in B and now sent to A for collection or payment. This set, however, was subjected to a valuation process in the exchange market at some previous date; that is, its values have already been determined, with reference to the exchange rate then current, in terms of the currency of the one country and the other. Once this valuation was made it passed out of the sphere of the exchange market proper. The other set consists of the bills and drafts, originating in A, which on the given date are being presented to or by A's international bankers for purchase or sale. These bills are the ones entering into A's exchange market for the given day in question, and hence the ones governing the short-time determination of the exchange rate, so far as A alone is concerned.

Banking and commercial practice may result in either of two situations with respect to these bills. Either bankers' purchases and sales of drafts will approximately offset one another; or they will not. Under in-

convertible paper the former is probably the commoner and more typical situation.[1] In that case the constant effort of the bankers will be to avoid any very large excess one way or the other. If purchases in A become materially in excess of sales, then the bankers in A will quote a rate of exchange somewhat more in A's favor. This shift, by making drafts somewhat cheaper and by making the yield of commodity bills somewhat less, will bring demand and supply in A's exchange market more nearly into harmony, while at the same time the shift in the rate will of itself, by changing the terms at which money values are translated from one currency into the other, change the total money values of commodity bills and drafts being currently purchased and sold. It will decrease that of bills, increase that of drafts, and restore the two totals to substantial equality.[2]

For any given period of short duration, say a single day or a few weeks, it then appears that as far as commodity bills and drafts are concerned (provided that the function of the bankers is, as here assumed, this offsetting of purchases against sales) the total money values in the money of A of media of payment payable to A (commodity bills) and of media chargeable against A (bankers' drafts) tend to approach equality. Any upsetting of that equality tends to be corrected by the

1. Of the two countries, one will usually do most of the banking business connected with foreign trade, and the other only the smaller part. And as a rule the exporters in either country will receive payment by discounting bills, instead of by collecting on drafts, to about the same extent that the importers of that country make payments by buying drafts, instead of by accepting bills; that is, the two sets of transactions will in either country alone tend to balance. The existence of a permanent inequality is probably a logical alternative rather than a condition common in actual trade.

2. The term "total money values," used here and throughout the subsequent discussion, is designed to get around the difficulty involved in using either prices alone or quantities alone as a measure of the volume of transactions, or as an index of change. Obviously the quantity of media entering a given market (or, as below, of commodities) might be doubled, and conditions in that market be radically altered, without producing anything like an equivalent change in prices. "Total money values" may be regarded as simply the aggregate of the sums paid (or received); or if the concept of an average can be given significance here, as the product of average price times average quantity.

direct action of the bankers themselves in changing the price they will give or receive; that is, in changing the exchange rate quotation. The rate of exchange, as far as this set of operations alone is concerned, then emerges as the approximate numerical ratio between the total money values, measured in A's money, that are payable to A, and the total money values, measured in B's money, that A has to remit to B.

The same process will, of course, take place in B on the given day. Since substantially the same rate will prevail in both countries at any one time, the rate actually arrived at will be a product or resultant of market condition in *both* countries. On any given day the media of payment originating in A will tend to produce one rate, while those originating in B may tend to produce another, but telegraphic communication will prevent the existence of more than one rate at any given time. And the tendency of the total money values of media of payment chargeable against and payable to either country to approach equality will of course remain effective, with the qualification that the operation of the tendency in the one country will be somewhat modified, and retarded or accelerated, by conditions in the other. Any inequalities between supply and demand arising in either country from the adjustment of the rate will soon disappear, through the operation of the mechanism just discussed. And when the bills and drafts here considered are later presented in B for collection or payment, their total money values in B's money will also approximate equality, since the two sets of values are translated from the terms of A's money, in which they are substantially equal, to those of B's money at precisely the same rate of exchange.

These conclusions, however, have been based on the assumption that bankers' sales and purchases tended

always to offset one another. If, on the contrary, they steadily fail to offset one another, then a continuous transfer of unpaid balances to meet the excess becomes necessary. But this fact does not upset the validity of the argument above, so far as bills and drafts alone are concerned. Suppose purchases of commodity bills by A's bankers to be steadily in excess of their sales of drafts. This excess must be remitted in some way by B's bankers, and if for the moment we continue to assume that commodity bills and drafts are the only media employed, it is clear that it must be remitted by bills against commodities drawn in B, and payable in A. Such bills originate in B, but the moment they pass out of the exchange market — usually on the day of sale — they become credited to A's account in B. They represent a net balance due from B, and as soon as they are credited to A become included in the media payable to A, and are to be set off against the media, originating on that day in A, which are chargeable against A. And A's bankers will not purchase in any short period — a few days or weeks — an excess of commodity bills above their sales of drafts which is substantially greater than the net sums they can expect to receive from B's bankers. For in the absence of media of payment other than bills and drafts they have no alternative way of securing what is due them, and international bankers in general are averse to piling up steady balances due among themselves. The net result will be that the excess purchases of A's bankers in any given short period will be substantially equal to the net balance accruing to their credit in B during that period; a balance which, translated into A's money at the current rate of exchange, will affect their transactions in the exchange market quite as much as tho it had originated in A instead of in B. The tendency of the total money values of media of

payment to approach equality hence continues as effective as before, but with this difference: the equality now exists, not between total values of media originating in A alone, but between the total values of media originating in A and chargeable against A, and those of media originating in A and payable to A, *plus* a certain net balance of other media payable to A but *originating* in B (translated into terms of A's currency at the rate of exchange prevailing when they were credited to A's account in B).

The foregoing discussion, for the sake of simplicity, assumed commodity bills and drafts to be the only media of international payment employed. Under the conditions of actual trade, however, all of the types of media previously mentioned are or may be used. But even if we include all of these various types, the tendency to an equality of total money values of media of payment continues to be substantially valid.

A brief consideration of the proximate, short-time results of a disturbance in the exchange market will make this clear. Such disturbances may arise from either or both of two sources: from commodity transactions, or from the "invisible items" field, especially international borrowing. Let us take a disturbance in commodity transactions first, and assume that because of a marked increase in commodity imports, A has a large balance of payments to make to B. Assume also that the disturbance arises suddenly, in the course of a few days — an assumption of course contrary to the usual course of events, but one which will simplify the discussion somewhat. This situation will obviously upset the previously existing equality of total money values of media of payment in A, so far as commodity bills and drafts are concerned. The volume of drafts now demanded from A's bankers to pay for the new imports will greatly exceed

the supply of bills offered them for purchase; or else the volume of commodity bills originating in B, and sent to A for collection, will exceed that of drafts originating in B and sent to A for payment; or, more probably, both sets of conditions will prevail. A's bankers will then seek means, other than the remitting of bills and drafts, of making payments in B. They will secure short-time loans from B's bankers; they will ship such securities, both short- and long-time, as have a market in B; and if these expedients are for the time being inadequate (for example, the quantity of international securities which the banks can secure at short notice, without an undue advance in price, is probably not large) they will themselves ship commodities that can find an easy market in B. So especially gold, which under the paper hypothesis enters as a commodity alone.[3]

The net effect of this whole process, as far as A is concerned, will obviously be the restoration, with larger items on each side of the equation, of an approximate equality between the media of payment chargeable against A and the media payable to A. For the original increase in the total money values of the media chargeable against A (that is, the bills and drafts based on the original increase in commodity imports) will soon be offset by the increase in the total money values of the media payable to A. That is, the transfer of securities from A to B, the making of loans, and other attempts to effect a payment of balances due, are to be regarded in the first instance as transactions chargeable against B, and payable to A: transfers of securities, other international borrowings, and so on, are in the short-time

3. Under the gold standard, gold would begin to flow before any large movement of securities developed. As far as the proximate mechanism goes, this matter of the relative order in time of the various movements appears to be the chief difference between the operation of the elements in the process of adjustment under paper, and their operation under gold.

view outright sales, and not simply loans. And this short-time equilibrium within either country obviously *must* tend to prevail. Commodity transactions must be paid for almost at once, and international bankers will not as a rule permit large balances to remain long unpaid as between themselves; they will not, and indeed cannot, carry large transactions on their own capital alone for any considerable period. Even if they do so carry transactions the operation, whether undertaken for the benefit of commodity dealers or for other banks, becomes in effect a loan by one country to the other. Under the preceding argument this loan must be placed under the head of media of international payment, and be credited or debited at the rate of exchange prevailing when the loan is contracted.

A similar type of argument applies in substance to the correction of disturbances arising in the "invisible items" fields. New international borrowing on a large scale, for example, will in the *short-time* period, that is to say in the first instance, be offset by increased movements of commodity bills, drafts, short- and long-time borrowings, and so on, in the other direction, with the net result that an approximate equilibrium between "media of payment," in the larger sense of the latter term indicated above, will be restored in each country. If such an equilibrium does not prevail at any given time the exchange rate will move, and by its movement restore substantial equality. Either the movement will cause a change in the volume of the demand for or the supply of media of international payment in each country (especially of finance bills and other short-time borrowings, since the volume of commodity transactions and of long-time investments cannot be materially increased in a few days' time), or it will change the rate at which money values are translated from the one cur-

rency into the other.[4] The repercussion of these changes on the level of the exchange rates presents quite a different problem, which will be dealt with at another point; here we are concerned only with the nature of the short-time mechanism itself, not with the ultimate results of its operation.

The substantive results of the discussion up to this point may, for convenient reference, be summarized in two formulae; formulae, it must be remembered, which are here intended to apply only to the "short-time" period, as that period was defined at the beginning of this section, and which are based on the character of the operation of the short-time exchange market mechanism.

FORMULA I

Total money value in money of A of media of payment payable to A = Total money value in money of A of media of payment chargeable against A.

The same formula of course applies to B.

FORMULA II

Either:

Rate of exchange = (Total money value in money of A of media of payment payable to A) ÷ (Total money value in money of B of media of payment chargeable against B),

Or:

Rate of exchange = (Total money value in money of

4. It may also be observed that the tendency toward a restoration of equality between the total money values of media of payment, made effective primarily through a change in the exchange rate quotations, will be still further strengthened in the case of large disturbances by the movement of the discount rate. If there is a large increase in the demands upon bankers for accommodation, whether it be for the sale of drafts or for the purchase of commodity bills, this drain of bankers' capital into international trade will cause a rise in the price charged for the use of such capital (that is, in the discount rate), and thus still further check the disturbance, unless international trade plays a wholly insignificant part in the transactions of the given banking center. For a tentative statistical examination of the correlation between exchange rates and the rate of discount under the gold standard, see the article by E. G. Peake in the Bankers' Magazine, (London) for August, 1921.

A of media of payment chargeable against A) ÷ (Total money value in money of B of media of payment payable to B).

With reference to the first formula, which expresses the equilibrium tendency just examined, this equality between total money values of media has been spoken of above as "approximate." How close is the approximation? Obviously the total values for any given day will not necessarily be equal. But if the previous argument is valid any daily inequality will at once tend to produce its own correctives, in the movement of the exchange (and discount) rates and in the effect of such movements on the demand and supply of media of payment. Since the fluctuations in the exchange rates are themselves the measure of the divergence, the relative inequality can be no greater than the relative amount of the movement of the exchanges between the time they begin to move and the time that the corrective influences become effective. Since this last period is very short (the first shock will probably be taken up in large part by finance bills, which can of course be created very quickly), the inequality will presumably be small at any one time, and will tend always to disappear entirely. It must be remembered, also, that this formula was derived only with reference to the exchange market transactions of a given "short-time" period. When the so-called "underlying conditions" change substantially they will of course end the life of the given period, and they may or may not set up another in its stead.[5] But while the actual content of the terms of the formula will then be materially altered, the effectiveness of the tendency it expresses continues unimpaired. Whatever the time period held in view, the total money values of the media of payment originating in that period which are charge-

5. See the discussion on this head in Section IV, below.

able against any given country, and payable to it, will tend always to approach equality.

The validity of either of the alternative statements of the second formula appears almost by inspection. Under the assumptions on which this whole paper is based, there is nothing other than the total money values set upon the media of payment entering the market which *can* determine the exchange rate. In other words, the rate is simply the numerical ratio between the total money values, in the money of either country, that are paid in that country for the right to receive certain sums in the other country — that is, for the title to certain media of international payment — and the total money values, in the money of the other country, that ownership of these media entitles the holder to receive. Both prices and quantities enter into its determination, not prices alone. The two alternative statements may seem to permit the derivation of two distinct rates at the same time. But it is unnecessary to do more than state the fact that modern cable communication, and the high degree of organization of modern exchange markets, make impossible the simultaneous existence of two substantially different rates. Only one will prevail at any given time. This rate will be the resultant of exchange market conditions in each of the two countries. Through the process of adjustment already considered in connection with Formula I, the total money values of the media of payment offered and demanded in each country, if they fail of approximate equality at the then current rate, will alter that rate and in turn be altered by it, until for any given day a rate is established which will hold market conditions in both countries in substantial harmony. This of course does not mean, however, that the rate will be an exact mechanical quotient obtained solely from the media of payment entering the

market on that given day alone; speculation and other "extra-mechanical" forces will to some extent modify its theoretically rigid determination, and tend to average up the day-to-day fluctuations in the demand and supply of media. Since these other forces, however, must of necessity find their expression through the agency of total money values, their existence does not constitute an exception to the foregoing analysis.

The preceding paragraphs have been concerned with the nature of the short-time equilibrium tendencies appearing *within* a given country with respect to media of payment. There is also some reason for believing that an equilibrium tendency exists, even under paper, *between* the two countries: that in the short-time period a true par of exchange will appear. But whereas the equilibrium of media of payment will tend, I think, to hold good for any time period whatsoever under paper, precisely as it does under gold, any given parity under paper is wholly dependent for its existence, as will be demonstrated shortly, upon the existence of substantial stability in what have been described as the "underlying conditions" governing international trade, and is indeed created by that stability. As soon as these conditions change materially in either country the given parity is destroyed.

The question of how long this "stability" may properly be supposed to continue is too open to debate to permit the basing of any very positive conclusions upon its existence, and I shall therefore simply present for what it is worth a brief outline of the argument leading to a belief in the existence of a paper parity, without attempting to make this parity an integral part of the general structure of the international exchange process under paper. It must also be remembered that even if such a parity does exist, its actual importance in the

conduct of trade depends entirely on how long any one period of "stability" in the general conditions of trade can be supposed to endure. If the period is presumably very short, the parity will have little or no effect on the conduct of trade; if long, it may play a part almost as great as that of the gold parity. The decision is left to the reader.

The economic conditions in each country which ultimately determine the course of international trade may be grouped under two more specific heads: first, the demand and supply schedules in each country for "international" commodities (and indeed, in the ultimate sense, for all commodities); and second, the so-called "invisible items" in foreign trade — charges for shipping, foreign investment, and so on, which are created by the demand and supply of services as well as of commodities. For the purposes of the present inquiry, let us assume that these determining conditions are for the time being constant; either that they do not change enough to affect foreign trade materially, or that the changes in them offset one another.[6] Assume further that the rate of exchange prevailing at the beginning of this period is stable — that is, that it expresses these conditions accurately, and holds them in balance. Given these assumptions, it then appears that certain forces exist in the mechanism governing the exchange of media of payment which will tend to check any movement of the rates away from the level of stability, and to restore them to that level.

Suppose the rate, through some purely temporary cause which is at once removed and which does not

6. These conditions are probably, in actual trade, in a state of slow but constant change. The amount of the net change in any short period, such as a few days or weeks, will ordinarily, however, be very slight, and with respect to such a period these conditions cannot inaccurately be regarded as substantially constant. The assumption of "stability," when made in connection with a discussion of short-time phenomena, is therefore not unreasonable.

affect the underlying conditions, such as an inaccuracy in the competitive mechanism, to move relatively against A. These results will then follow. First, an increased offer in A of commodity bills, a decreased demand for bankers' drafts, and so on through the other media of payment, together with an increase in the total money values of bankers' purchases in A, and a decrease in their sales. Second, an increase in the total money values of media chargeable against A, and a decrease in those payable to A; and an opposite movement in B. Finally, altho the temporary cause of the disturbance is soon removed, and the additional payments due to B are soon made, a rate of exchange will remain which leaves A's bankers with balances to pay to B's bankers: the media-of-payment equilibrium (Formula I) is upset. At this rate, favorable to those having payments to receive in A and unfavorable to those in A who have payments to make to B, the supply of media payable to A is in excess of the demand for media chargeable against A, and A's bankers will therefore quote a new rate, that is to say will offer a new price, more in A's favor. For such a rate will tend to restore substantial equilibrium between the total money values of media of payment, and to make the bankers' accounts with B balance. The reverse process will take place in B. At the same time the movement of the rates against A makes A attractive to B's bankers and exchange speculators for the placing of short-time loans (if they suppose, that is, that the rate will eventually return to something like its original level). This short-time lending will *of itself* tend to shift the rates in A's favor, since it represents, for the moment, an attempt by B to make payments to A.

Both sets of forces, international short-time borrowing and the direct effect of changes in bankers' quotations of rates in the exchange market, are thus working

to check the movement of the rates, and to bring them back. If the original cause of disturbance be assumed, as above, to be temporary and to disappear almost immediately, it is clear that the return movement of the rates will go on, presumably with various irregular oscillations and counter-movements, until a rate is established which once more satisfies the underlying conditions; that is, until the original rate is restored. For while such a disturbance will presumably affect commodity prices and even commodity movements for the time being, the ultimate determinants of the course of trade, namely the demand and supply schedules for commodities and services, are under the original assumption above not affected. When the disturbance is removed they will reassert themselves, and cause the restoration of the original rate of exchange: granted that monetary stability which was assumed earlier in the paper, no other forces *can* determine it.

In this short-time period, therefore, there is reason for thinking that a self-restoring equilibrium of the exchanges will tend to appear, based primarily on the movements and prices of media of payment, and created simply by the temporary stability of the underlying economic conditions existing in each country. In this sense it then becomes proper to speak of a par of exchange even under paper, tho always with the qualification that its existence depends upon the continuance of this stability; a parity which is derived empirically, and which emerges simply as the level to which the rates tend to return. The nature of the parity in a long-run period, during which these conditions will necessarily change, will be examined in a later section; here we are concerned only with the short-time aspects. It may be added that the paper parity will probably be not a specific rate as it is under gold, but a narrow zone. In

the absence of a definite basis for the parity, such as that provided by the ratio between physical weights of standard coins under the gold standard, the operation of the "determinant forces" will probably not be sufficiently rigid and accurate to cause the emergence of a single flat rate. Within this zone, any rate will presumably satisfy trade conditions, and operate as an effective parity. As to the probable width of the zone, it is hard to say. Even under paper a movement in the rates as great as two or three per cent would probably cause a marked counter adjustment in the exchange market, but beyond that I should hesitate to go.

III

We pass now from the short-time mechanisms governing media of international payment to our second principal problem: the commodity market and the relationships between the total money values of a given country's commodity imports and exports. In making this transition we must also change the time period to be held in view. For the treatment of the proximate forces of the exchange market, the "short-time" period defined above was a satisfactory basis. But changes in the commodity situation usually require a time much longer than any one such period to work themselves out. On the other hand, the present section is not concerned with the ultimate effects on the general levels of commodity prices and money incomes of such changes: these questions will be taken up at a still later stage. Rather, it is primarily concerned with the proximate mechanism by which changes in the exchange market are transmitted to commodity prices and movements, and with the immediate effects of such changes on these prices and movements. The time area involved is necessarily in-

determinate, and may therefore be designated as a "transition period" between the true "short-time" period of the exchange market and the period required for the appearance of the ultimate effects of a given disturbance on prices and incomes. Something like a year would probably be a reasonable estimate of its usual duration. It is obvious, however, that a time area of this size may embrace two or more "short-time" periods in the exchange market proper, and that the working-out of the effects on the commodity situation produced by the phenomena of any one such short-time period will be blurred and obscured, in its later stages, by the immediate effects on commodities of subsequent changes in the exchange market, arising in a subsequent short-time period. To avoid this difficulty, and to simplify the discussion, these subsequent changes will be ignored here. We shall consider only the mechanism through which, in the course of the transition period, the conditions of the exchange market in a single short-time period alone, even tho this last be of only a few days' duration, are passed on to, and reflected in, the conditions of the commodity market.

It must be observed that this part of our general analysis is not concerned with the why and the how of international commodity trade in general, nor with the forces that ultimately determine international commodity prices. Fundamentally, of course, the commodity market in large part creates and governs the exchange market, but here we still have in mind a period short enough to permit the exchange market to be regarded as having an independent existence prior to the exchange market: so that commodity prices follow, instead of preceding and themselves determining, the prices of media of payment. Taking an international commodity trade for granted, and assuming the under-

lying determinants of that trade to be in a state of substantial stability, we shall here consider only the changes, within the limits of that stability, which may arise in the media of payment — commodity relationship in a comparatively short-run period. The discussion involves three questions, which will be taken up in order: first, the conditions proximately determining the total money values paid and received for commodity imports and exports; second, the nature of the equilibrium tendencies between such money values; and third, the process by which the volume of commodity movements is affected. After this examination of the character of the particular mechanisms involved has been completed, an attempt will be made to trace the operation of the mechanism as a whole in a specific case of disturbance.

(1) If we define import prices as the prices that the importer pays for the given commodities in the money of his own country, and similarly define export prices as the prices received by the exporter in the money of his country,[7] it is obvious that the commodity market is, in the first instance at least, dependent on and in point of time subsequent to, the exchange market: the prices actually paid or received for commodities in the commodity market are the prices previously paid or received (with allowance for brokers' charges) in the exchange market for the media of payment based on these commodities. But it is also obvious that the given commodity prices may be paid and received not at the same instant that the corresponding prices are paid and received for the corresponding media of payment (that is, not when the total money values of these media are determined, in the money of the one country and of the

7. That is, we are not here concerned with the price that the ultimate consumer gives, or that the ultimate producer receives, unless these persons chance to be themselves importing or exporting directly.

other, by their purchase and sale in the exchange market) but at some later date. The transmission of total money values from the buyers and sellers of media of payment to the buyers and sellers of commodities, and the working-out of the effects of changes in these money values, will ordinarily involve certain "lags" in point of time. The amount of the lags will depend upon the time required to ship commodities from one country to the other, the form of the media of payment employed, and the character of the particular businesses. Disregarding the effect of the "invisible items," which may lessen or increase the amount of the changes in the commodity situation, but which will not alter their qualitative character,[8] these lags are of two sorts.

First, the lag arising in particular transactions. The price established in the exchange market for the media of payment based on a given commodity transaction will, if a bill of exchange be used, determine the *export* price of the commodities involved as soon as the bill is discounted. But those commodities will not enter the *importing* country, obviously, until the time required for their shipment has gone by. Nor will the price originally established in connection with them in the exchange market become a commodity *import* price until after this lapse of time: the commodities are simply not there. If on the other hand bankers' drafts or cable transfers be used, which do not enter the exchange market until after the commodities have been received as imports, the import price is immediately determined with reference to the then current rate of exchange, practically synchronously with the determination of the price of the corresponding medium of payment. But the export

8. Unless changes be assumed to take place independently in the invisible items themselves during the period of the operation of the proximate commodity mechanism. This possibility, tho more apt than not to present itself in actual trade, may be ruled out here to simplify the exposition.

price which is received in the other country for these goods may be determined then; or the precise sum that the exporter was to receive in the money of his own country may have been agreed upon previously. In the latter case the import price will be determined by translating this export price into terms of the other currency at the now current rate of exchange, and will be established at a time subsequent to the establishment of the export price by at least the length of time required to ship the commodities. The same thing holds substantially true if the exporter, on the basis of his sales contract with the importer in the other country, is able to borrow from a bank the amount (subject of course to discount by the bank) that he will later receive from the importer.

This lag, however, arises only in relation to a given commodity transaction, and does not necessarily occur in all cases, and while its general effect is probably to cause the import prices of a particular parcel of commodities to lag behind the corresponding export prices, it is perhaps not very important. The second lag, which affects the general body of commodity transactions as a whole, is of greater significance. It arises from the fact that the full effects on commodity prices of any important change in the level of the exchange rates will not necessarily be felt at once, or even at the end of the time lag considered above. Nor can the nature of these effects be predicted in general terms. A given change may operate, for example, to the disadvantage of A's importers, relative to a particular commodity transaction. But only when the next contract is made between A's importers and B's exporters can the full results of the change be seen, for the original commodity transaction was contracted for *before* the given movement in the rates took place, and the gain or loss from the move-

ment, depending on how the contract was drawn, must be accepted without recourse. When a new contract is arranged, however, this movement can be allowed for in the terms of the contract. Needless to say, small or obviously temporary movements in rates will hardly affect commodity transactions; and, also needless to say, the nature of the new arrangement, the distribution of the gain or loss, will depend on the relative advantage or disadvantage in trade of the particular dealers and of the particular countries as a whole. No general prediction is possible. A movement of the rates against A, for example, may cause a rise in A's import prices, with no change in B's export prices, or a fall in B's export prices with no change in A's import prices; and it may cause a rise in A's export prices with no change in B's import prices, or a fall in B's export prices with no change in A's export prices. More probably, the gain and loss will to some extent be divided between the various dealers in the two countries: all four sets of prices will shift somewhat. It must further be observed that in many cases, if not in most, speculation will tend to decrease the time required for these price adjustments, and to diminish the disparity between the various sets of prices. Where the market for the given commodity is highly organized, as for wheat, speculative forces will cause the prices of that commodity in the importing country to adapt themselves to the probable prices of these imports long before they are received or even shipped. With this process, however, we are not here concerned.

(2) So much for the elements in the proximate mechanism connecting commodity prices with the exchange market. It is clear that in the short-run or transitional period here under consideration any given condition in the exchange market will tend to be reflected, with the

indicated lags and barring other disturbances, in the markets for commodities and services, including foreign investments;[9] and it therefore follows that the equilibrium tendency of media of payment in the "short-time" period, summarized in Formula I, will also tend to appear as between the total money values of a given country's exports and imports. That tendency may be expressed as follows:

FORMULA III

Total money value in money of A of A's exports = Total money value in money of A of A's imports.

The same formula, of course, applies also to B's exports and imports.

The term "imports and exports" however, under the conditions of actual trade, of course includes both commodities and services, and the formula therefore applies simply to the *totality* of a given country's international dealings. It governs the total money values, measured in the money of the given country, not only of commodity transactions, but also of international borrowings (regarding these borrowings as being in the first instance an outright payment from one country to the other, and their liquidation as another and separate payment), of shipping charges, and of the various other invisible items.[1] If all prices for such goods and services

9. Should the conditions of the commodity and other markets thus established not be in substantial harmony with the underlying economic conditions in each country, or should these last conditions themselves change, the result will, of course, be a change in the situation in the commodity markets, and a reflection of this change in the exchange markets and exchange rates. But such changes require a longer time to work themselves out than the "transitional" period here held in view embraces, and they involve a study of certain forces not relevant to the present discussion. Consideration of them is, therefore, reserved for a later part of the paper. See especially the first half of Section IV, below.

1. No attempt is made in this paper to discuss the mechanism of international borrowing, but it is obvious that such borrowings are of two distinct types: short-time loans, effected between international bankers, and primarily a phenomenon of the

were paid and received instantaneously with respect to any given transaction, and if changes in the exchange market produced their full effects on commodities and services immediately, this formula would be a necessary and immediate corollary of the media-of-payment formula. Since these conditions of course do not prevail in a dynamic state of trade, the operation of the tendencies it expresses is necessarily blurred and retarded, and it therefore presents a correspondingly less accurate picture of actual conditions. The existence of the various lags previously examined makes it necessary to take as the basis of the formula, not the total money values of the imports and exports entering or leaving a country in any given day or other period, but the total values of those exports and imports which are related to the *exchange market* transactions of that day or period. In other words it obtains its validity and is brought into substantial effect, not from transactions in commodities and services as such — not from the direct relations, for example, between A's exporters and A's importers — but from the operations of the foreign exchange market; that is, from the competition between, and the relations of, international bankers. Under modern conditions it tends to be valid *because* the media of payment formula is approximately valid. It is a resultant only, and there is probably nothing in the mechanism of international transactions in commodities and services alone, as these transactions are now conducted, which would independently make it effective even under the gold standard.

money market alone; and long-time loans effected for industrial, governmental or other purposes. The effects of any large movement in the international trade situation will be much more permanent and far-reaching for the second class of loans than for the first, and will operate through somewhat different mechanisms. The reader may also be reminded again of the fact that all the elements going to make up the totality of a given country's exports and imports, whether commodities or invisible items, will at some stage in their life history enter and affect the exchange market. For the purposes of an examination of such imports and exports which takes the exchange market as its point of departure, it is therefore not misleading to regard these elements as homogeneous.

The formula here derived is of course based only on those commodity (and services) transactions which are related to a given set of media-of-payment transactions of a particular "short-time" period in the exchange market. When we attempt to consider the first type of transactions as a whole, and to take an area in time larger than any one such short-time period, the situation with respect to commodities and services becomes very complicated. It is no longer permissible to assume substantial stability in the underlying conditions, and any one chain of effects therefore blurs the operation of preceding and of subsequent chains, and in turn is blurred by them. But the equilibrium tendency with respect to any given set of transactions that find expression in a common exchange market (whatever be the time area of that market) of course continues in operation, and in the long run will be substantially effective for the totality of a given country's trade, irrespective of such time areas in the exchange market alone. Temporary inequalities in particular transactions will largely cancel and disappear in the aggregate of transactions. It is therefore presumably true, as it was for the media-of-payment formula, that whatever the time period selected as the basis, the commodities and services formula is substantially valid for the transactions occurring within that given period.[2]

2. No attempt has been made in the foregoing discussion to show the analogy of the short-run mechanism under inconvertible paper to that under gold, but with certain obvious exceptions this analogy between the mechanisms as such, tho of course not between the results of their operation, is in many respects very close. The three formulae, also, with the qualifications made necessary by the introduction of gold as a part of the legal currency, are presumably as valid under the gold standard as under paper. An application of the method of analysis outlined in this paper to the conditions of international trade under the gold standard, where a conclusive statistical basis can more easily be obtained, might well cast new light on the older theory.

It may be added that a formula for the determination of the exchange rate can be based on exports and imports. Since one country's exports are the other country's imports, under the original assumption of trade between only two countries, the rate can be regarded as the numerical ratio between the total money values in the money of A of A's exports, and the total money values in the money of B of B's imports; or vice versa.

(3) The next question to be considered in connection with the mechanism of the relationships between the foreign exchange markets and commodities is that of the process by which changes are transmitted in the first instance to the volume of commodity movements. (The effect of the invisible items is again disregarded.) The transmission, in addition to the lags of commodity prices behind the prices of media of payment which we have just examined, involves another lag arising from the inevitable delay in the reflection of changes in commodity prices in the volume of commodity movements. The amount of these last changes, even in the first instance, is not necessarily predictable. Suppose, without as yet examining the detail of the process in a particular case, that the net result of a movement of the exchange rates against A is a higher level of the prices both of export and import commodities in A. A's exporters, on finding that they are going to be able to secure a higher price than before for their commodities if import prices in B are left unchanged, may simply elect to pocket the gain without attempting any change in the volume of sales; or they may take advantage of the change to increase their sales by quoting a lower price abroad, and themselves receiving only the original price. And A's importers, on finding that they must pay higher prices than before, may cut down the volume of their purchases and thus, assuming the export supply schedule of the other country to remain unchanged, force a return to the original price paid by them (in which case *export* prices in B will fall); or they may find it possible either to absorb the loss themselves or to pass it on to the domestic distributive system, without reducing the volume of

But such a derivation of course yields only the rate which tends to appear as a "normal" or average level with respect to the given set of transactions, rather than the rate actually quoted on any given day: that rate is, as already indicated, proximately determined with reference to the total money values of media of payment entering the exchange market.

the flow of goods. If on the other hand the result of the movement of the exchanges against A were, not a rise in A's commodity price levels, but a fall in B's price levels with no change at all in A, the opposite chain of argument would apply to B's exporters and importers. The volume of B's commodity exports might stay the same, or fall off; of imports, stay the same or increase. Finally, if the movement of the rates affected commodity prices in *both* countries, as would more probably happen in actual trade, the result would be an unpredictable and indeterminate blending of these two types of change in commodity movements. And the closeness with which the change in commodity movements would follow that in the exchange rates is also unpredictable. In addition to the "lags" of commodity prices behind the prices of media of payment, there is also a possible lag due to the varying rapidity with which exporters and importers can or will change the volume of their purchases and sales.

Only by assuming a movement in the exchange rates so great and of such duration that if a loss were involved exporters and importers and the distributive systems could not absorb it, or that if a gain were involved competition would break up any general attempt to monopolize it, can we safely assert that a change in the volume of commodity movements will necessarily follow a movement in the exchange rates. And even with this assumption neither the amount of the change nor the closeness with which it will follow the movement in rates can be definitely predicted; only its direction can be foreseen. Finally, the various alternative results that can follow any given movement in the exchanges are so numerous that a positive statement as to the nature of the probable effects on commodity price levels, and on commodity movements in general, can have but little significance. Before any one such move-

ment can work itself out another will begin, and the results of the first will become inextricably blended with those of the second. The effects of such a movement on the "invisible items" will be equally complex and unpredictable, but under the original assumptions leading to a virtual elimination of this field they may be ignored here; granted monetary stability, the dominant and determinant factor in international trade will of necessity be commodity transactions and commodity movements.

We have now completed our examination of the various elements of the mechanism which proximately connects the exchange market with commodity prices and commodity movements in the "transitional" period. To present a more coherent picture of that mechanism as a whole it will perhaps be profitable to trace through the effects of its operation in a specific illustrative case of disturbance — disregarding, for the purpose of the argument, the effects of those subsequent disturbances which would almost certainly arise in actual trade before the original chain had worked itself out. Let us take two countries, A and B, and assume that some change in the general industrial conditions of B results in a considerable increase in B's demand (in the schedule sense) for imports of steel from A. Assume also, to simplify the discussion, that the net result is a permanent increase in the volume of these steel movements.[3] What will happen?

B's demand for A's steel has undergone a marked increase in the schedule sense, but the new price level for imported steel, whether higher or lower or the same as before, and the extent of the increase in the volume of

3. In other words we are materially altering the "underlying conditions" governing trade, and attempting to trace the process by which exchange and commodity markets adjust themselves to the new status of these conditions. To simplify the discussion still further we may also assume that the change takes place rapidly, and that the underlying conditions then resume substantial stability for some time, tho of course on a new level; that is, no further fundamental disturbances are introduced.

commodity movements, cannot be determined except with reference to the new level of costs of production for steel in A, and to the exchange rate. The cost of producing steel in A will presumably rise at first, from the operation of temporary increasing costs, altho ultimately, when the steel industry has become adjusted to the increase in output, the operation of decreasing costs will probably cause the price of steel to fall below the original level. The transmission of these various effects to the importers of steel in B, however, will in turn depend upon the level of the exchange rates, and to their determination we must first turn. It is obvious that if we can assume the general character and volume of the trade between the two countries to remain for the time being unaltered, except with regard to steel, the exchange rate will move in A's favor. (The detail of the change will be considered in a moment.) This movement will, by tending to lower A's export prices, discourage A's steel exporters, while by tending to raise B's import prices it will discourage B's steel importers.[4] The net result will be a somewhat smaller increase in the volume of steel movements than would have taken place had the old exchange rate been maintained; and, unless A's steel exporters will accept the whole loss in order to expand their market to the utmost, a rise in the prices of steel imports in B.[5]

4. Theoretically, A's export prices might continue unchanged, and B's import prices be lowered by the amount of the shift in the rates; or B's import prices continue unchanged and A's export prices rise. In actual trade both sets of prices will almost certainly be affected somewhat.

5. In the long run, when the operation of decreasing costs will presumably cause a decline in the prices of steel exports in A, the prices of steel imports in B will fall and the volume of the steel movements will increase somewhat, unless the steel exporters in A elect to keep all the gain and do not attempt to increase sales. If the total money values of the steel exports continue unchanged the exchange rates will not be affected. If they are altered the rates will shift also, and slightly modify these results. The primary determinants here are of course the supply schedule for steel in A, and the demand schedule in B, together with such changes as may occur in those schedules.

With respect to the general question of changes in the level of export prices, it may be

So much for the effects relative to steel alone. There remains for consideration the question of the effects on the exchange rate and on commodity movements in general. The mechanism of the operation of these effects has been indicated at some length in the preceding pages, and need not be presented in detail here. The increase in exports of steel from A will cause an increase in the demands upon international bankers for means of payment in A (an increased supply in A of bills of exchange, or an increased demand in B for bankers' drafts, etc.), and consequently a movement of the exchange rate in A's favor. This movement, as explained elsewhere, may by simply changing the ratio at which money values in the one currency are translated into terms of the other be of itself sufficient to restore equilibrium in the exchange market. More probably, by making A a favorable place to sell goods, and B a favorable place to buy, it will call forth an opposite supply of or demand for media of payment, largely based on goods, and adequate to offset those media newly created by the steel transactions.[6] In both cases A's imports would be encouraged and her exports discouraged, through the mechanism and with the "lags" previously discussed; and, as was also indicated above, the change in commodity prices and movements will in turn result in a shift of the exchanges somewhat in B's favor. Whether or not the shift will be all the way back to the former level will depend on the relative advantage in

added that in manufacturing the most probably result of an increased output, if the increase be an appreciable percentage of the former output, is of course increasing cost at first, followed by decreasing cost as the industries adapt themselves to the new demand. For agricultural products the second stage is less likely to follow, unless the increase in demand be so great as to induce radical improvements, and in any event will probably appear much more slowly. The ultimate results of disturbances in this field would, therefore, be somewhat unlike those of the industrial disturbance here considered.

6. A small movement might be offset by the transfer of international bankers' capital from one country to the other, without affecting commodities at all, but a movement of any importance and permanence will almost inevitably affect commodities.

trade of the two countries in the light of the new steel movements.[7]

The initial results of the steel transactions on the general trade situation then are, first, a movement of the exchanges in A's favor; second, an increase in the volume of A's commodity imports and a probable decrease in the volume of A's exports other than steel; and third, a return movement of the exchanges in B's favor. Beyond this point it is hardly profitable to push the analysis of the mechanism. The changes in the volume of A's exports and imports, because of their reaction on the demand and supply schedules of both countries, will in due course and after various lags again affect the exchanges somewhat, and this movement will start another cycle. The process becomes similar to a decreasing spiral, and need not be pursued farther. The two things of significance, which bring some order out of this chaos, are first, the tendency of the total money values of the media of payment chargeable against and payable to any given country to approach equality (Formula I); and second, the tendency of commodity prices and commodity movements to follow, with the indicated lags, important changes in the prices of the corresponding media of payment.

The net effect on the exchange rate, so far as the steel transactions alone are concerned, will probably be some permanent shift in A's favor. Inasmuch as B is taking an increased quantity of goods from A,[8] without any

7. The ultimate result of the steel transactions might be the simple substitution of steel for some other commodity or commodities in A's export trade; or A might be induced to accept new imports from B that would offset the steel exports in the exchange market. Obviously the results on the advantage in trade, on the levels of export, import, and domestic prices, and even on the exchange rates, cannot be predicted except in terms of the trade of particular countries at particular times; and even this prediction would be dubious. See the discussion, however, in the next section.

8. Any large increase in particular commodity imports will in actual trade almost certainly produce some permanent increase in the totality of imports; and in the first instance will cause a very marked increase. See footnote 6 above.

accompanying increase in A's schedule demand for B's products, B can only make the additional payments for these goods by offering its products at a somewhat lower price in A than before. The application of Formula II to B then indicates that the rate will move permanently in A's favor: the total money values of media of payment chargeable against B, and measured in B's money, will increase relative to the values of these media when they are regarded as payable to A, and measured in A's money. In other words the underlying conditions governing trade have altered permanently, and a new level of the exchanges is required to satisfy them. Also, a new parity will emerge, if the earlier argument under that head be accepted. It may also be observed, for reference later, that since the additional goods B is now sending to A to make the requisite additional payments are being offered at a lower price in A's money, the increase in the quantity of these goods necessary to make their total money values in A's money equal the total money values, also measured in A's money, of the new increment of commodities now being demanded by B from A — that is, of B's additional steel imports — must be somewhat *more* than proportionate to the increase in the quantity of these steel imports alone.

The substantive conclusions of the discussion in this and in the preceding section may be stated very briefly. First, an examination of the character of the media of international payment entering the exchange market under an inconvertible paper régime, and of the processes by which their prices were determined, led to the conclusion that an approximate equality would tend always to manifest itself between the total money values of media of payment chargeable against and payable to any given country, with reference to any selected time period in the exchange market. Second, and incidental

to the establishment of this conclusion, it was found that the exchange rate tends, as far as its immediate derivation is concerned, to be simply the numerical ratio between the total money values in the money of the one country, and the total values in the money of the other country, of the media of payment chargeable against or payable to either country. Some reason was also discovered for believing that a true parity might arise, even under paper, in the short-time period, altho the argument was admittedly inconclusive. Third, an investigation of the connection between the prices of media of payment and the prices of the corresponding commodities showed that the transmission of changes from one to the other involved certain time lags, and other inaccuracies, which are not entirely predictable. Fourth, the total money values of a given country's exports and imports were seen to have a constant tendency to approach equality, if the term "imports and exports" be so interpreted as to include the invisible items as well as commodities. Finally, an analysis of the process by which the volume of commodity movements is affected by changes in the exchange market revealed the nature of the mechanism and of the additional time lags involved, but showed also that the number of the alternative possibilities in any particular case made a definite statement as to the net effects on commodities impossible, even for the comparatively brief "transitional" period in the life of the given operation.

IV

The discussion up to this point has been primarily concerned with "short-time" or "transitional" mechanisms in the foreign exchange and commodity markets, and has made the exchange market prior in point of

time to the commodity market: it has regarded commodity prices as resultants rather than as determinants of the prices of media of payment. This method of approach is valid for a treatment of the short-run period, but in the ultimate view of the case commodity prices and commodity markets are of course the real determinants. The present section takes this "ultimate" view as its basis. It will attempt to deal with certain long-run aspects of the foreign trade situation, and especially with the question, hitherto necessarily neglected, of the relationships prevailing between international conditions and the more purely domestic conditions within any given country. Of the various specific problems which at once suggest themselves we shall consider only four: first, a continuation into the long-run field of the earlier examination of the working-out of the effects arising from a given case of disturbance in the field of international trade proper; second, an examination of certain aspects of the long-run relationships between the various kinds of prices — export, import, and domestic; third, a brief consideration of the connection between international trade and the phenomena of the business cycle; and finally a tentative investigation of the probable character of the par of exchange under inconvertible paper, in the long-run period.

It will be remembered that the specific disturbance discussed at the end of the previous section arose from a marked increase in the demand of B for the steel exports of A. The ultimate results upon general price levels and money incomes of the working-out of the effects of any single process of this sort would, under the conditions of actual trade, be almost certainly blurred and hidden (as was explained above) by the effects of subsequent disturbances in the exchanges, and of disturbances arising from sources other than the field of international trade

alone. If however we can be permitted, for the purposes of the argument, to abstract from these other disturbances, we can then indicate to some extent the probable nature of the effects on prices in general, and on money incomes.

To return to the earlier hypothesis, A is now exporting much more steel to B than before. This increase may simply represent a diversion of A's production of steel from domestic markets to the export trade, and a shift of labor and capital from domestic to export manufacture, but more probably the larger part of it at least, assuming a substantial increase in exports, will be new production. Furthermore, this new steel may be a net addition to the volume of A's exports; or it may represent in some part simply a substitution of steel for exports of other commodities. The first alternative will presumably be the immediate result; the second, the ultimate one, since the general tendency of the exchanges to move somewhat in A's favor will restrict those exports of other commodities which had only just been profitable at the former rates. Eventually, then, the volume of A's exports will be increased by an amount somewhat less than the increase in the volume of steel exports alone.

What of the volume of A's imports? B must make to A an increase in payments great enough to offset in the money of A the increase in A's exports, and under the rigid paper hypothesis these payments will in large part be made in commodities. A part of the payments, also, may be made by a shift in the balance of the "invisible items," but for reasons explained earlier in the paper this form of payment will be neglected here.[9] The net

9. If independent disturbances in this field be ruled out, as they were by the original hypothesis of isolation in connection with the present chain of effects, the invisible items will not introduce any qualitative modifications into the conclusions reached. Their effect will simply be, by their absorption of a part of the disturbance in the general situa-

immediate result of this disturbance, as was shown in the last paragraphs of the previous section, was a movement of the exchange rate against B. Therefore an increase in the volume of B's exports, more than proportional to the increase in the volume of A's exports, will now be necessary to effect the required additional payments: B's products are worth relatively less than before in A's money, and A's products relatively more in B's money. It is true that insofar as the steel exports tend merely to replace certain other items in the totality of A's exports, an increase in payments by B will become unnecessary; and insofar as the exchange rate, even with an increase in payments by B, tends to swing back to the original level—a possibility suggested in the earlier discussion of mechanisms—a more than proportionate increase in the *volume* of B's exports will also be unnecessary. But if the new commodity transactions are of any considerable size, only an abnormal peculiarity in the conditions of demand and supply will prevent some permanent shift of the exchange rate in A's favor, as far as this series of causes alone is concerned.

The net long-run results of these changes can be stated briefly. There has been an increase in the volume of A's exports, but a more than proportionate increase in the volume of B's exports; hence there will be more commodities than before in A, and less than before in B. Under the quantity theory, and with the original assumption of a fixed quantity of money within each country, this will mean some eventual fall in the average of A's prices, and some rise in the average of B's.[1] On

tion, to diminish the quantitative importance of the effects passed on to commodity prices and movements. The invisible items of especial importance in this connection are transfers of international bankers' capital, and transfers of investment capital. The former, primarily in the guise of finance bills, are the principal agency through which large disturbances will in the first instance be checked and absorbed.

1. These results would seem to be in diametric opposition to those obtaining under gold, for in the strict Ricardian reasoning a new need on the part of B to make payments

the whole A gains, and B loses, from the results of the train of effects produced by the increase in the steel transactions. A's people gain insofar as their money incomes fail to reflect, or lag behind, the fall in commodity prices (which is presumably not great, however, since the change in the total volume of commodities in A is small, relative to that volume); and they gain directly, insofar as they are consumers of imports, from the lowering of the level of import prices.[2] Moreover A, as a country, is receiving more commodities than before from B, while she is paying for those commodities with a less than proportional increase in her own exports: she is getting her imports at a *lower* commodity price. *Mutatis mutandis*, B's people lose. For them the level of import prices has risen, money incomes will lag behind or fail to reflect the rise in prices, and B, as a country, is paying a *higher* commodity price than before for her imports. Further, money incomes in A's export in-

in A would lead to a flow of gold, a rise of prices in A, and a fall in B. But I cannot see that the results in the two cases are necessarily inconsistent. Under the gold standard, if B has new payments to make to A, part of those payments will of course be made in gold, if the exchange rates move far enough; and to this extent the Ricardian reasoning as to the effects on prices is valid. But a large part of the payment — and, if the latter is of considerable size, perhaps the largest part — will be made in commodities, precisely as under paper; and as far as these commodities alone are concerned prices will be affected, under the quantity theory, in a way exactly opposite to that produced by the gold movements alone: prices in A will tend to fall, and in B to rise, precisely as under paper.

The net result may be a rise of prices in A and a fall in B; or a fall in A and a rise in B; or no change at all. The amount and direction of the change, for example in A, will depend on the relation between the proportion that the new gold bears to the media of payment already circulating, and the proportion that the new increment of commodities bears to the commodities already in process of exchange. If the former is larger, prices will rise; if the latter is larger, prices will fall; and if the two are substantially the same no change will take place at all. And the same type of argument applies to B. In other words the theory of the price changes appearing under inconvertible paper is *not* inconsistent with that of the changes under gold; the former is simply a special case of the general theory that works itself out more fully under gold.

In this connection see the paper by Professor Taussig, already referred to, in the Quarterly Journal of Economics for May, 1917.

2. Logically, of course, A's import prices might remain unchanged if B's export prices fell by the full amount of the shift in exchange rates, and vice versa, but a compromise result is more probable: one set of prices will fall a little, and the other not so far as it otherwise might. It must be remembered, of course, that the exchange rate is not determined even ultimately by import and export commodity *prices* alone, but by total money values.

dustries will not fall, and may rise (from the probable rise in export prices and from the ultimate operation of decreasing costs), while for the opposite reasons money incomes in B's export industries will not rise, and may fall.

The foregoing discussion has traced the chain of consequences following on a change originating primarily in the international trade situation. The requirements of logical completeness also demand an examination of the chain of consequences produced by a change originating in the "domestic" situation as distinct from the purely "international." Such a change would be represented, for example, by a rise in the general price level in A due to monetary causes alone, and not accompanied by an original change in either A's or B's supply or demand schedule for foreign trade commodities. The mechanism of the consequent effects, however, does not differ in its component elements from that which we have already outlined, and any very detailed or accurately qualified discussion would simply involve a repetition of the argument above. The probable results of its operation can be indicated very briefly.

Granted a rise of relative importance and permanence in the general level of A's prices, the accompanying rise in A's export and import prices [3] will reduce the volume of commodity exports, increase that of imports, and through the effects on the total money values of media of payment produce (with the necessary allowance for "lags," which now operate *from* commodities *to* media of payment) a marked initial movement of the exchange rates against A. This movement in turn, through the mechanism already examined, will result in still higher

3. The question of the relationships between domestic and international commodity prices is discussed below. Here, without examining the mechanism of the process, it is arbitrarily assumed that the rise in purely domestic prices has eventually caused a similar movement in the international prices of the given country.

import prices in A (higher by the initial rise, plus the rise due to the adverse movement of the exchanges), and in higher export prices; while in B export and import prices will stay the same or fall. These conditions will, however, through their effects on the demand and supply schedules in the two countries, tend to increase the volume of A's commodity exports and decrease that of its imports, relative to the initial changes in those volumes. The exchange rate, in comparison to its earlier movement, will now swing back somewhat in A's favor, and this swing will set up a new chain of effects, of somewhat smaller quantitative importance than the preceding one. As far as this cause of disturbance alone goes, then, there will follow a diminishing spiral of such alternate movements and repercussions, which we need not trace in detail, with the net result that, taking the exchange rate fluctuations as a whole, the level of the rates will have moved permanently against A. And, again without repeating the argument of the preceding pages, it further appears that as a result of this change A will lose, while B will gain: a result opposite to that produced by the disturbance previously considered. Prices in general in A, and especially import prices, have risen,[4] while money incomes will lag behind or entirely fail to reflect the change in commodity prices. Moreover, export industries will be in some measure discouraged. In B the opposite conditions will prevail.

The question of the general relationships prevailing under inconvertible paper between export, import, and domestic prices is not capable of any very definite answer. The earlier discussion has shown, incidental to the examination of other matters, not only that export

4. The increase in the volume of commodity imports relative to exports would, taken alone, cause prices to fall, but the quantitative importance of this influence in the general price situation will be offset by the more than proportionate increase in commodity import prices — proportionate, that is, to the increase in the quantity of commodities themselves.

and import prices within any given country can and will move for considerable periods in different directions, but also that such movements may arise quite independently of the situation in the markets for purely domestic commodities. And no force originating in the field of purely international trade was discovered which would of itself restore any given previous relationship between the three groups of prices. In a dynamic state of trade this constant change is inevitable. The underlying conditions that determine domestic as well as international trade, and that govern the direction of the investment of a given country's capital and labor, are themselves continually changing, and the various sorts of prices in which they find expression must necessarily alter their relationships in correspondingly unpredictable fashion. Nor is this situation peculiar to the conditions of trade under inconvertible paper. It is equally true of countries whereof the monetary systems are based upon gold. Only this can be said: if the terms of the trade between two countries are such as to make the production and exchange of international commodities either a distinctly more profitable or a distinctly less profitable field than purely domestic investment, the result will under competition tend always to be a shifting of labor and capital into the more favored field. Money incomes received for similar sorts of services (whether it be the services rendered by the recipient himself, or by something he owns) will tend always to approach equality, tho haltingly and only after an unpredictable lapse of time. But the proximate agency in this process is of course the price mechanism, and in this sense the three groups of prices may be said to move, or to tend to move, in harmony.

There seems to be some reason, also, for thinking that import prices are somewhat more sensitive than export

prices: that they will react more quickly to changes in general conditions, whether these changes be domestic or international. First, they are one step nearer the consumer in the distributive mechanism. Second, they must be proximately determined with direct reference (from the importer's point of view) to market conditions within the importing country, whereas export prices are determined in the first instance abroad, and the exporter may be able to pass on any given disturbance, for a time at least, to foreign import markets. Third, the effects of speculation in discounting future price changes, and in bringing the prices of international and domestic commodities into harmony, are probably felt primarily in the field of import rather than of export prices, since the prices of goods that will *enter* the given country are of greater immediate importance in the general domestic price situation than the prices that will be received for goods *leaving* that country (for export prices are of immediate concern only to the given producers involved; import prices, to all domestic sellers and buyers of the commodity). Finally, since the general terms and conditions of production can be changed only with relative slowness, import prices probably tend to be established, in the first instance at least, with reference to the corresponding export prices in the *other* country. A decrease in the (schedule) demand of either country for imports, for example, would presumably at first merely cut down the volume of export production in the other country, without necessarily affecting prices either there or in the importing country. Only after some time would it result in a substantial reduction of prices and in the driving of labor and capital out of the export industries involved.[5] This whole argument may be open to

5. The possible "lag" here considered is, of course, not to be confused with the lag examined earlier in the paper in connection with the export and import prices of a particular shipment of goods; a lag which arises only in the proximate, short-time mechanism of exchange, and which operates in the opposite direction.

question, and is advanced simply for what it is worth. It may be added, however, that insofar as it has validity the exchange rate would appear to move, in any given case of disturbance, with export prices as the proximate base or pivot: that is, it will tend to produce its principal *initial* effects on *import* prices.

Finally, apart from questions of detailed mechanism, it is obvious that the character of the general relationship between international and domestic prices will depend in part on the relative importance of international trade in the economic life of the given country. Where that importance is slight, the international prices of the country concerned will be primarily resultants, and changes in them will tend to follow, rather than to cause, changes in the domestic situation. Where it is great, as in England at the present day, international phenomena may themselves be a significant and even a dominant factor in conditions which are primarily domestic. Changes in the volume of international trade may affect purely domestic prices materially, through changes in the proportion of commodities in the given country to the quantity of money; and, of perhaps greater actual importance, changes in the volume of the media of international payment may change the level of the discount rates, and thus produce a marked effect upon the conduct of purely domestic commerce and industry, with a corresponding effect on domestic prices.

Closely related to this question of prices, and probably an integral part of the general connection between international and domestic trade, is the question of the phenomena of the business cycle. No attempt has been made to introduce the business cycle into the earlier discussion, and too little is as yet known about its nature and its operation to permit the drawing of general conclusions based upon its existence, but we may at least

suggest one or two modifications which a full recognition of it would necessitate in the previous analysis. First, the operation of the short-time mechanism examined in the second section of this paper might well be appreciably altered, at least with regard to the nature of its quantitative results, by the position of the given country in the business cycle. If, for example, the country were in a period of general depression and contraction, a lowering of commodity import prices following a favorable movement of the exchanges would not necessarily result in increased purchases by importers, and certainly not in so great an increase as would appear in a period of rising prices; and a period of acute depression might virtually suspend the operation of the international trade mechanism. If viewed in this light, the previous analysis of that mechanism must be regarded as based primarily on "average" or "normal" conditions.

Second, the passage of the country through the business cycle will *of itself* change the levels of commodity prices in general, alter exchange market conditions through the effect on the discount rate, affect the desire and the ability of dealers and producers to engage in commerce, and thus change the terms at which the given country can trade — quite apart from any necessary change in the general character and direction of its industry and commerce. Should the cycles in the countries involved proceed at different times and rates, wide fluctuations in the exchanges might follow from these differentials alone. Finally, the cycle will obviously affect the terms and amounts of international borrowing. On the other hand, its effects will be felt primarily in the field of raw materials and unfinished goods, especially those entering the more important industries, and only in much smaller degree in the field of what may be called consumers' goods. But it is at most possible here

to indicate some of the questions which the relation of the business cycle to international trade suggests.

The last problem to be considered is that of the long-run nature of the so-called par of exchange under inconvertible paper, a problem which has been reserved until this point because it seems to be most open to debate, and also because it is not a necessary and integral part of our general argument. In the "short-time" period the paper par of exchange, or "zone of parity," was found to be created by and dependent on the existence, admittedly temporary at best, of substantial stability in those underlying conditions which ultimately govern the terms and the course of international trade. But in the long run these determinant conditions will of course change materially and unpredictably, and in changing must destroy the particular parity based on their previous stability. Either one of two views concerning the character of this change is tenable. It can be regarded as absolutely continuous, in which case there will be no possibility of the appearance of a true parity, however brief the time period of which it is predicated; or it can be regarded as proceeding in a series of stages, as alternating periods of marked general variation with periods of comparative quiescence, during which specific changes in one direction are substantially offset by specific changes in the other.

The latter view seems to me to be more in accord with what is known of the general character of business activity, and with general economic reasoning. In the long run the exchange rate may be regarded as being simply an expression, through the medium of the various kinds of prices, of the relationships and interactions between the underlying economic conditions of the one country and the other.[6] If these conditions change the

6. The exchange rate actually prevailing in the market is fundamentally, of course, a product of two main sets of forces, not simply of one; first, of the interactions as between

rate will change, in the absence of a corrective device like the gold parity; if they remain comparatively stable or "static" for a time it also will tend, barring monetary disturbances, to remain stable, and to give expression to that temporary stability in the form of a true par of exchange — a parity, it may again be observed, which is derived empirically, and which emerges simply as that point or zone to which the rates, during the continuation of underlying stability, tend to return. In other words, altho over a period of years no one such parity can be maintained under paper, nevertheless a discrete series of short-run parities will tend to appear, none of them being necessarily the same as any other. But the point need not be pressed further.

This paper has been chiefly concerned with the mechanisms and processes which may be presumed to appear in international trade under a paper régime. To simplify the analysis as far as possible certain assumptions were made, and adhered to throughout the discussion. Two countries only were considered; fairly effective competition in and between these countries was postulated; and the problem of monetary disturbances was ruled out by assuming the quantities of money within each country to be fixed. In addition the factor of "invisible items" was as far as possible eliminated. The qualifications to the conclusions here reached which these assumptions make necessary would now be appropriate, but this task

countries of the underlying economic conditions in each; and second, of the monetary situation within each country. This second set of forces has been ruled out of our whole discussion, or made at most a negative translating agency, by the original assumption of a fixed quantity of money in each country. Any attempt to define the ultimate character and function of the exchange rate in more specific terms (such as those suggested by a long-run application of Cassel's purchasing-power-parity doctrine) must of necessity be open to serious question. The relation of the rate to the complex and constantly shifting forces which fundamentally determine it is hardly capable of being definitely formulated. All that can be said is that, in the ultimate sense, the rate tends to express the results of the interaction of these forces in and between the countries involved, and to hold them, through pecuniary mechanisms, in some sort of aggregated balance — a balance, as has already been indicated, in which the terms are rarely at rest.

may be left to the reader: the primary concern here has been the composition and operation of the various mechanisms, rather than the quantitative nature of their results. Nor has any systematic effort been made to point out the differences and the analogies between the mechanisms existing under paper and those existing under the gold standard, illuminating tho these be: limitations of space, as well as the danger of obscuring the course of the argument, forbade. Finally, the lack of adequate data has prevented any attempt at a correlation, however superficial, of the tentative results here obtained with the conditions of international trade in Europe during and immediately after the war, when many countries were in effect if not avowedly on a paper basis. Nevertheless the material for the proof or disproof of these results will to a large extent be found in the economic incidents of the war period, and it is perhaps permissible to hope that the conclusions here reached will prove to contain an explanation of at least a part of the extraordinary disturbances in foreign trade witnessed since 1914. Those disturbances clearly indicate the desirability of an inductive investigation along lines that may well be new, and that may demonstrate, as a corollary, the need of an amplification of certain parts of the older theory.

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A THEORY OF PROFIT AND INTEREST

SUMMARY

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INTRODUCTION

THE laws to be established here are as follows: In every business there is a size of capital, called optimum size, which yields a maximum rate of profit. The rate of profit on other capitals exhibit a law of increasing returns below, and one of decreasing rates beyond, the optimum size. The cost of production decreases with the increase of capital even beyond the optimum size. The rate of interest on loans has a minimum in every industry, namely, in the loan to the optimum size of the industry. The interest paid by the borrower to the lender cost the borrower nothing, neither labor nor time; because it is created by the law of increasing return, without additional labor, without additional time.

In what follows, the term capital is used as equivalent to "total investment," and in the case of corporations it includes the following items:[1] "Capital stock, bonds,

1. Federal Trade Commission Report on Shoe and Leather Costs and Prices, June 10, 1921, p. 97.

and other long-term debts; surplus as reported by the company; all items of appropriated surplus, such as reserves for income and excess profits taxes, discounts, bad debts, etc.; and the average of current borrowings as shown for the first day of each month. Reserves which were not appropriations of surplus, such as depreciation on buildings, machinery, etc., were not included. From the sum of the foregoing items were deducted such assets as are attributed to good will, patent rights, trade marks, etc., together with the sum of all investments in property not used in the manufacture."

The most closely guarded secrets of every business are its capitalization, its profits, and its cost of production. Our knowledge of the first was notoriously defective. This prevented the U. S. Census from ascertaining statistics on profits. It says on this point:[2] "Even if the amount of profit could be determined by deducting the expenses from the values of the products, the *rate* of profit on the investment could not properly be calculated because of the very defective character of the returns regarding capital." As to costs of production, practically no data were available, and the economists believed that in every industry they were practically the same for all factories except for differences due to different managerial efficiencies. But in 1914 the Federal Trade Commission was established and given inquisitorial powers. Its statements regarding industries are authoritative. Similarly, the U. S. Department of Agriculture has published in the last few years many bulletins on farming as a business.[3] These two series of publications furnish a fund of information to test economic doctrines.

2. Abstract of the 13th Census of the United States for 1910, p. 437.

3. The Reports of the Federal Trade Commission will be referred to here, as "Reports" and the Bulletins of the Department of Agriculture as "Bulletins." The predecessor of the Federal Trade Commission, the Bureau of Corporations, has published, in 1911 to 1913, a report on steel, in three parts; which will be also freely drawn upon and referred to here, as Steel Report.

I. The Facts

1. What do we understand by the term "facts"; particularly, what are scientific facts?

If a physicist investigates the fall of a stone in space, he will use the best instruments, and among others the best clock that he can secure; and measure the fall of the stone, say for every one-tenth of a second. His measurements are facts; we shall call them the primary data.[4] If the physicist, or any other physicist, repeats the experiment the next day he will not get the same results, not the same primary data. There are three main causes for this disappointing state of affairs.[5] The physicist is not absolutely exact himself; his instruments are not accurate; and the surrounding conditions, like the weather, even the building in which the experiments are conducted are sources of error and disagreements. However often the experiment is repeated, no two results ever agree; therefore, primary data cannot possibly be used as building stones for the science. The necessity arises of devising a method by which other data, called secondary data, are derived from them; which may be used as the basis of a science. A common device is to take the measurements referring to a certain quantity and take an average of them. The figure so obtained is a secondary datum. Secondary data are those which are gotten by adjusting in any manner the primary data. They are removed one or more steps from the form in which they were observed. Every law of every science holds always good only for the secondary data, but is not necessarily true for the primary data.

4. H. Secrist, Statistical Methods, p. 16.

5. L. Kotany, "The Accuracy of Labor," Quarterly Journal of Economics, August, 1920.

In trying to proceed in the investigation along the lines of the exact sciences we must try to get, for every quantity we desire to establish, as many primary data as possible; because the greater the number of primary data is, the greater the accuracy of secondary datum derived from them — and here we encounter a difficulty. Suppose we desire to ascertain the rate of profit in the shoe business, of factories with the capital of $200,000. Referring to the definition of capital given above, it is obvious that we cannot expect to find even a single factory whose capital is exactly $200,000. In order to overcome the difficulty we shall take all factories, the capitals of which are within certain limits, for instance, factories, the capitals of which are within $100,000 and $250,000, and average the rates of profits made by these factories. This is, indeed, the manner in which the statements in the Reports, and in the Bulletins are gotten up.

We now proceed to give the facts as ascertained in the Reports and Bulletins.

2. The Federal Trade Commission investigated the rates of profit of 237 shoe manufacturing companies, and reported as follows: [6]

Groups	Per cent earned					
	1914	1915	1916	1917	1918	1919
Under $100,000	12.8	14.6	31.5	26.5	20.6	39.9
$100,000 to 250,000	16.7	15.8	25.2	22.5	21.8	40.7
$250,000 to $1,000,000	15.5	15.2	26.6	25.0	18.2	40.8
$1,000,000 to $3,000,000	15.0	15.5	26.3	20.3	23.0	41.6
Over $3,000,000	14.7	14.6	25.4	26.3	21.3	39.9

6. Report on Leather and Shoe Industries, August 21, 1919, p. 104. The last two years are from Report, June 10, 1921, p. 105.

In the year 1914 the capital between $100,000 and $250,000 made the maximum rate of return, and therefore this size is the optimum size. The capitals less than that exhibit a law of increasing returns, while the capitals greater than that show a law of decreasing returns. In the year 1915 the same three phenomena are shown, with one small difference pertaining to the capitals between $1,000,000 and $3,000,000. The small difference would have disappeared if the capitals had been grouped differently. For our purpose it is not necessary to have the same groups every year, they are only made if the results of one year are to be compared with the results of another year; but for the purpose of establishing economic laws each year may be considered by itself, and the fact that by a grouping of the capitals the three phenomena emerge is the important feature, and not the sizes of the groups themselves. It is also clear that the European purchases introduced the element of imperfect competition, which accounts for the deviations from these three phenomena. In the year 1916 the second item disturbs the emergence of the three phenomena, but a regrouping would show them in utmost purity. When we entered the war in 1917 the disturbance was still greater, and similarly in 1918. After the war ended in 1918, the three phenomena appear again in utmost purity in the year 1919. In that year the optimum size appears, however, for the capital of $1,000,000 to $3,000,000.

It is really only necessary to show that the maximum exists. The two other phenomena, that of increasing and decreasing rates of return, follow from it necessarily as mathematics proves.

The results in the case of fifty tanning companies are as follows:[7]

7. Report on Leather and Shoe Industries, August 21, 1919, p. 28.

Groups	Per cent earned			
	1914	1915	1916	1917
I. Under $100,000	9.7	15.7	24.0	32.6
II. $100,000 to $250,000	13.6	23.5	26.6	34.4
III. $250,000 to $1,000,000	12.4	16.0	30.4	29.3
IV. Over $1,000,000	12.8	16.4	34.6	25.4

Every year of the four years shows clearly the law of the maximum rate of return. The laws of diminishing and increasing returns show strictly in 1917. In 1914 and 1915, the results deviate from them in one item each by less than one-half a per cent, which is really remarkable, considering the disturbed times. In the year 1916, the divergence is greater in one item, but a regrouping would smooth this out. The fact that such a grouping according to size is possible is the essential point, the details of the grouping are of no importance.

In the commercial wheat flour milling business, the result is as follows: [8]

Groups	Per cent
I. Over 1,000,000 barrels	22.2
II. 300,000 to 700,000 barrels	23.3
III. Under 300,000 barrels	19.8

All three laws show clearly and strictly.

In the meat packing industry there are over a hundred packers with comparatively small capitals. The maximum rate of return is secured by those having a turnover of between $10,000,000 to $25,000,000. Those having larger turnovers realize a smaller return, and the five huge packers of the country have a still smaller rate of return. This appears from the following two tables: [9]

8. Report on Commercial Wheat Flour Milling, September 15, 1920, p. 104.

9. Report on Meat Packing Industry, Summary and Pt. 1, pp. 91, 92 and p. 74, also Pt. 5, p. 86.

	Group	Per cent
I.	Over 25 millions	19.3
II.	10 millions and less than 25 millions	23.6
III.	5 millions and less than 10 millions	13.7
IV.	2 millions and less than 5 millions	15.9
V.	Under 2 millions	12.1
	I and II combined	20.6
	III, IV, and V combined	14.1

The law of decreasing return is also shown, except for the discrepancy in Group III, which the regrouping would eliminate, as appears from the second part of the table.

In the meat packing business there are five great packers with huge capitals. The independent packers have very much smaller capitals, nevertheless, the rates of return secured by the latter are greater than those secured by the great packers, showing that their capitals are beyond the optimum size. This appears from the following table:

Year	Per cent earned	
	Independent packers	Five great packers
1914	12.6	8.3
1915	13.1	12.8
1916	22.1	18.5
1917	18.1	15.0

The Summary of the Report on milk and milk products, states: [1]

The most profitable canned milk companies appear to be those having a medium volume of sales. Those companies whose sales ranged from $1,000,000 to $5,000,000 earned a rate throughout the five-year period considerably higher than that earned by companies having smaller sales. Companies having sales above $5,000,000

1. Summary on Milk and Milk Products, 1914–18, June 6, 1921, p. 12.

ranked second in rate of return on gross investment, companies having sales from $250,000 to $1,000,000 ranked third, and companies having sales below $250,000 ranked fourth.

Here all three laws appear quite pure.

The manufacture of farm implements presented many difficulties, but the existence of the law of the maximum rate of return was clearly shown:[2] "In respect to the implement business, excepting the years 1913 and 1914, the smallest companies (not exceeding $1,000,000 investment) generally made a higher rate of return on investment than the larger companies and also their rate of return generally exceeded that of the International Harvester Company."

In the beet sugar industry,[3] many causes prevented the commission from making a statement in figures; but it says that there was no doubt in the opinion of those most conversant with the industry that there was an optimum size, but there was some difference of opinion as to how large the capital of such an optimum size was. In the opinion of one expert who is quoted at length, it is mentioned that the optimum size was quite small. This expert considered the plant of 450 tons capacity as the best size.

A very similar condition is shown to exist in the manufacture of canned foods.[4]

As for the steel business: "Some of the most successful concerns in the steel industry outside of the U. S. Steel Corporation, show higher rates of return upon their total investments."[5] The rate of return in the case of the latter averaged only 12 per cent for the first ten years of its existence, even on the low basis of property valuations of the Commissioner of Corporations.[6]

2. Report on The Causes of High Prices of Farm Implements, May 4, 1920, p. 109.
3. Report on Beet Sugar Industries in the United States, May 24, 1917, p. 177.
4. Report, May 15, 1921, pp. 1, 2.
5. Report of the Commissioner of Corporations, p. 343 of Pt. 1.
6. Ibid., p. 342.

The same results were obtained by the Federal Trade Commission when it investigated the rates of return for the War Industries Board. While the detailed statements have not yet been published, the essential feature is known, namely, that the "independents made as large or larger rates of return as the Steel Corporation." [7]

3. The three laws hold in agriculture; moreover, the knowledge that they do has been possessed by practical farmers all over the world for thousands of years.[8] "When the conditions affecting the agriculture of a region have remained stable for a considerable period local agricultural practice tends to become approximately what it should be for the best results." [9] Therefore, examples for the law of increasing rate of return can be had in abundance. Examples for the law of decreasing returns cannot be had so easily for the reason stated above. But in Bulletin No. 341, page 66, there is a table which shows clearly all three laws.

INCOME ON CAPITAL ON 378 OWNER FARMS, CHESTER COUNTY, PA.

Area groups, acres	13–40	41–60	61–80	81–100	101–120	121–160	Over 160
Per cent income	10.4	13.5	13.2	12.7	12.5	12.6	11.8

The maximum rate of return is realized on a farm from between 41–60 acres. The two other laws are shown here with almost ideal purity. The general remarks of the authors on the subject of this paper are so lucid, so happily expressed, that they may well be quoted.[1]

As will be seen in what follows, there appears to be under given conditions, a most profitable magnitude for many of the enterprises of these farms. Within certain limits, which can usually be ascer-

7. P. W. Garret, Government Control over Prices, p. 398.

8. This is shown in detail by Gustav Schmoller, Grundrisse der Allgemeinen Volkwirthschaftlehre, Pt. 1, pp. 470, 471.

9. Bulletin No. 341, W. J. Spillman and others on the Farm Management Practice of Chester County, Pa.

1. Attention is also called to the passages just preceding and following the quotation. They contain concrete illustrations of the views expressed in the quotation.

tained by farm-management survey methods, a farm enterprise may add materially to the profits of the farm business, while if the enterprise be made either smaller or larger than this the profits are reduced. Generally speaking, the farmers in the older settled agricultural sections have arrived at this optimum magnitude for the various enterprises they maintain on their farms. But they have done this in response to the action of obscure economic forces which are not clearly perceived. Hence many of them make mistakes in the matter of relative magnitude of the enterprises they maintain.

Some additional examples, mostly for the law of increasing returns, will now be given. Bulletin No. 651, on Anderson County, S. C., by A. G. Smith:

Crop acres per work animal	11 or less	12–15	16–19	20–23	24–27	28 or more
Per cent on investment	2.64	3.30	3.67	4.32	3.62	2.86

The maximum rate of return is 4.32 per cent on 20–23 acres. This example shows the three laws in absolute purity.

Bulletin No. 659. R. E. Willard on Ellis County, Texas, page 29:

Size of farm	80 acres or less	81 to 120	121 or more
Per cent on investment.....	6.0	6.4	6.4

From same Bulletin No. 659, page 41:

Acreage in cotton	25–63	63–72	72–76	76–82	82–99
Per cent on investment	5.8	5.9	6.1	6.8	6.9

Bulletin No. 694. H. M. Dixon on Lenawee County, Michigan, page 21:

Capital	$7,000 or less	$7,001 to $11,000	$11,001 to $15,000	$15,001 to $20,000	Over $20,000
Average labor income	$276	$386	$488	$569	$1139

Bulletin No. 716. H. W. Hawthorne on Washington County, Ohio:

Investment	$3,817	$4,860	$7,807
Per cent on investment.....	5.4	7.2	9.5

Bulletin No. 848. W. C. Funk on Small Farms near Washington, D. C.:

Capital	$2,747	$6,430	$7,451	$8,636
Rate of return	1.3	3.0	8.5	14.0

The law of increasing return shows.

Bulletin No. 941. H. M. Dixon and I. M. Purdon on the Ozark Region in Missouri:

Capital	$3,832	$4,631	$7,133	$8,937	$12,602
Rate of return.....	0.3	1.4	4.2	6.5	9.7

The above is a combination of the two tables contained in the Bulletin entitled *Rolling and Hilly Farms* and *Valley and Level Upland Farms.* While the two cases undoubtedly differ in regard to the size giving the maximum, the tables themselves do not establish it. The combined table just shows the law of increasing returns.

Bulletin No. 603. E. A. Boyer on Green County, Wisconsin, and Kane County, Illinois, page 13.

There are two interesting tables on dairy farms. The author thinks that Table VIII shows the profit in relation to the kind of dairy products sold. But, rearranging it according to the size of the capital, the law of increasing returns is shown. It is, therefore, possible that his results prove really nothing as to the relative advantage of the kind of dairy products sold. The rearranged table is as follows:

Capital	$22,496	$29,879	$33,609	$37,794	$37,977
Per cent on investment.....	3.3	3.9	4	4.6	4.6
No. of farms investigated...	3	49	32	33	26

Again the next table, Table IX, is supposed to show that frequently the deciding factor in reference to profits on dairy farms is the fact whether the cows are grade or pure bred. Rearranging the table according to size of capital we have:

Kind of Cows	Mixed or other grade	Grade Holstein	Mixed or other grade	Part pure bred Holstein	Grade Holstein	Part pure bred	Pure bred
Capital.....	$20,689	$30,652	$35,301	$38,279	$39,542	$41,318	$42,615
Per cent on investment.	2.8	3.6	4.8	3.7	4.6	5	5.7
No. of farms.....	10	62	22	3	34	9	3

In both tables the columns of three farms should be omitted. This is too small a number for secondary data. If this is done the table just shows the law of increasing returns and does not support the author's conclusion.

Bulletin No. 735. S. B. Nickols and E. L. Currieron, on Sugar Beets in Billings region, Montana, page 36:

Acres	5 or less	6–10	11–15	16–20	21–30	31–40	41–50	51–60	Over 60
Profit per acre..	$0.34	5.78	6.87	8.05	13.19	12.28	13.92	13.39	11.37

This table shows all three laws with only one discrepancy, that from 31 to 40 acres, which probably could have been smoothed out by a smaller grouping.

These examples show that in every industry there is an optimum size, which, however, is not necessarily the same for successive years. The phenomena of increasing and decreasing returns follow from it as a mathematical necessity. But in this respect the examples have shown certain discrepancies which require a further explanation: The most exact, the most advanced of all sciences are astronomy and physics; but even there the primary data are not taken at their face value. They are analyzed, corrected, and some of them, if need be, rejected. A similar investigation is quite possible in the case of economics.[2] If extraordinary conditions surround the operations of a factory, its primary data may be corrected accordingly before they are averaged with the data of other factories. If this had been done in the Reports and the Bulletins the discrepancies would not have appeared.

The optimum size of capital is different in the different industries, because it depends, among other things, on the technical stage of development of that industry. The highest size seems to be in the railroad business, about a billion dollars. A profession is a business in which the

2. E. g., on page 413 is shown how to adjust the primary data on capital before using them to form the secondary data.

optimum size is insignificant. In agriculture it is obviously small, but in dairying and allied industries it may be considerable. The optimum size is of profound importance in every respect, but this cannot be shown here in detail.

4. Our next task is to ascertain the facts as to the difference in the cost of production of factories engaged in the same industry.

The publications of the Federal Trade Commission show great differences in the costs of production of different producers of the same article. The cost of producing copper in 1918 ranged from less than 12 cents a pound, to more than 26 cents a pound; producing a ton of bituminous coal in the southwest field of Pennsylvania from $1.16 to $4.67; raising a twenty-month old steer for the market from $52.18 to $77.09; making book paper from less than $55 a ton to over $90 a ton. That these large differences actually form the structure of every industry and are not isolated instances appears from the following table,[3] showing in detail the structure of the newsprint paper manufacture in the United States in 1913.

	Number of mills	Produced tons	Per cent of total
Less than $27	2	169,548	18.0
$27 and less than $30	3	82,773	8.7
$30 and less than $33	1	75,290	8.0
$33 and less than $36	8	214,678	22.7
$36 and less than $40	17	361,602	38.3
$40 and over	2	40,472	4.3

The average cost per pound of producing sole leather in four *efficient* tanneries in 1914 was, in cents, 21.3, 23.6, 28.9, and 32.2; so that the last has a cost of 50 per cent higher than the first.

3. Report on the News Print Paper Industry, June 13, 1917, p. 91.

The most interesting data refer to the steel industry.[4] The ranges of the costs of production for the commodities named are as follows: Beehive coke, from $2.93 to $11.45; pig iron (basic), from $18.44 to $45.72; ingots (open hearth), from $30.60 to $66.34; structural shapes, from $45.54 to $76.79; plates-sheared, from $46.30 to $82.25; merchants bars, from $44.82 to $87.15.

The report of the Commissioner of Corporations on the steel industry contains many other illustrations [5] taken from the books of the U. S. Steel Corporation for the year of 1910. The average costs of ore per ton for three Lake districts, consisting of 43 mines, were as follows:

District	Cost	Labor	Supplies
Mesabi range	$1.05	0.21	0.11
Vermilion range	1.45	0.57	0.30
Michigan range	1.89	0.91	0.30

The cost of production differs even in the different mines of the same district. In the first two districts, the costs in the different mines vary from $0.56 to $2.96. In the Michigan district, the costs of production in the different mines vary from $1.39 to $5.64.

The corporation has 21 furnace plants in which it makes Bessemer pig iron. In the 15 furnaces of the Lake district "the cost above material — the most significant figure — ranged from $0.79 per ton to $2.75 per ton." [6] The total costs in the different plants range from $9.00 to $14.00.[7]

In ingots the same differences are shown on the whole, in each item and in each of its thirteen plants. The main differences are here in the pig iron, the raw ma-

4. P. W. Garret, Government Control over Prices, published for the War Industries Board, p. 404. The details of the tables are most illuminating, but cannot be given here.

5. Pt. 3, pp. 182 ff.

6. Ibid., p. 411.

7. Ibid., p. 412.

terial cost. But the works cost above material, also show substantial differences, being from $0.93 to $2.40.

Having established that differences in the costs exist, examples will now be given showing that the costs decrease if the size of the capital (or of the operations) increases.

BESSEMER PIG IRON, STEEL REPORT, PART 3, p. 403.

Tonnage group	Under $150,000	$150,000–300,000	$300,000–450,000	$450,000–600,000	Over $600,000
Average cost above material	$1.75	$1.32	$1.05	$0.99	$0.95

BASIC PIG IRON REPORT, PART 3, p. 413.

Tonnage group	Under $150,000	$150,000–300,000	$300,000–450,000	Over $450,000
Average cost above material....	$1.36	$1.02	$0.98	$0.97

BESSEMER BILLET INGOTS, REPORT, PART 3, p. 426.

Tonnage group	Under $150,000	$150,000–300,000	$300,000–450,000	Over $450,000
Average cost above material	$1.91	$1.53	$1.11	$1.09

IRON ORE, REPORT, PART 3, p. 388.

Tonnage group	Under $500,000	$500,000–1,000,000	$1,000,000–1,500,000	$1,500,000–2,000,000	Over $2,000,000
Average cost.....	$1.36	$0.68	$0.58	$0.65	$0.57

MESABI RANGE UNDERGROUND AND OTHER MINES

Tonnage group (gross tons)	Mines	Av. cost
Under 200,000	7	$1.37
From 200,000 to 400,000	4	1.20
From 400,000 to 600,000	2	1.21
From 600,000 to 800,000	1	1.23
Over 800,000	1	.95

OLD RANGE MINES

Under 200,000	10	2.02
From 200,000 to 400,000	5	1.69
From 400,000 to 600,000	2	1.52
Over 600,000	1	1.79

In view of the small number of mines another grouping would have been preferable, as it would eliminate the small discrepancies.

It is important to know that not only the total cost of production decreases, if the capital increases, but that every constituent part of the cost decreases as appears from the following examples: Defining as large plants in the canned food business, those that pack over 50,000 cases; and as small ones, those of less than 50,000 cases a year, the costs in the large and small ones compare as follows: [8]

Items	1916		1917	
	Large plants	Small plants	Large plants	Small plants
Number of plants	17	52	40	41
Number of cases packed	1,818,387	1,364,303	4,046,639	1,175,874
Cost of raw fish	$1.077	$1.456	$1.494	$2.024
Cost of containers	.803	.865	1.153	1.345
Labor costs	.618	.750	.648	.996
Other expenses	.993	1.040	1.007	1.316
Cost of production, excluding raw fish	2.414	2.655	2.808	3.657
Total cost of production, excluding selling expense	3.491	4.111	4.302	5.681

In the case of factories that produce a variety of grades and sizes of articles, the concept of the operating ratio [9] permits a comparison of the costs of production. This is not done in the Reports, but the profit is sometimes figured as a percentage of the cost. It is obvious that the former increases, if the latter decreases; therefore the following tables may well be quoted: [1]

8. Report on Canned Foods, December, 1918, p. 46.

9. The great importance of the operating for allied problems cannot be shown here.

1. Report on Shoes and Leather Costs and Prices, June 10, 1921, p. 103. A similar table for tanneries is on page 165.

SALES AND PROFITS OF SHOE MANUFACTURERS

Group	Profit on cost of production	
	1918	1919
Over $3,000,000	7.8	13.6
$1,000,001 to 3,000,000	6.4	12.2
$250,001 to $1,000,000	5.3	10.7
$100,001 to $250,000	5.3	8.8
Under $100,001	4.1	6.7

In agriculture the same phenomena holds; not only the total cost, but also each constituent part of it is smaller in the case of a farm with a larger capital. In Bulletin No. 341, Table 27, page 60 shows:

Sizes of farms in acres	Productive work units per farm		Crop acres per man	Man labor per crop acre	Value of labor per month per man	Crop acres per work horse	Work horses per man	Value of machinery per crop acre	Ratio of cost buildings to farm income	
	Man	Horse							Dwelling	Other buildings
13 to 40	184	82	13.7	$20.74	$23.93	9.0	1.5	$15.11	3.41	2.78
41 to 60	299	140	20.2	15.78	26.60	11.9	1.7	12.57	2.19	1.91
61 to 80	372	177	23.2	13.98	27.12	13.9	1.7	11.92	1.88	1.89
81 to 100	475	226	25.2	13.46	28.30	14.5	1.7	10.79	1.76	2.03
101 to 120	551	259	25.6	13.64	29.22	15.0	1.6	11.80	1.83	1.92
121 to 160	582	286	29.0	11.80	28.50	16.8	1.7	9.20	1.62	1.83
160 plus	856	444	31.1	13.05	33.77	17.4	1.8	8.94	1.68	1.91

As a matter of fact no examples should be needed to prove that the costs decrease with the increase in the capital. There is no difficulty in reducing the cost in any factory, if additional capital is made available, by the installation of additional labor-saving machines; because there is no difficulty inventing, if necessary, new labor-saving machines. The difficulty lies only in the fact that the cost of them will reduce the rate of profit on the whole capital, if the saving due to their introduction amounts to a rate on their purchase price, which is smaller than the return on the investment before they

were installed;[2] a point which obviously has an important bearing on the emergence of the optimum size.

There is another way of reducing the cost of production, which will be stated, but its consequences will not be further considered. In all that has gone before we have tacitly assumed that we were dealing with a factory. If, however, we considered a plant (that is to say a combination of several factories owned by one party), then there is an important case in which the size of the main factory remains at the optimum size; but its cost of production is materially reduced by the ownership of another factory, which furnishes it the raw material, an ownership which is called vertical integration. Take for instance, two producers of pig iron. Suppose that their blast furnaces are identical in every respect, are located side by side, so that all items of labor and transportation are the same for both. But suppose that producer A buys his ore, while producer B owns ore lands and uses his own ore in the manufacture of his pig iron. It is obvious that the cost of ore for producer A will be greater than that of B, because A pays the *market price* for ore. On the other hand, when producer B figures his cost of production, he will add to his *cost of producing his ore* the cost incurred at the blast furnace.

The actual figure taken from the Steel Report[3] will illustrate the matter:

Cost of producing a ton pig iron by Steel Corporation-B	9.71
Allocated profits on anterior operations	4.18
Cost of production of producer, A, who pays market price of ore ..	13.89

A vertical integration has the purpose of furnishing cheap raw material to the factory and thus it reduces the cost of production. But what the rate of return on the

2. The exact formulation of this will be given as part of the theory.

3. Pt. 3, p. 396.

total capital is in this case will not be investigated here. The great differences in the costs of production in the steel business, shown above, are partly due to such integration. We have one completely integrated plant in the U. S. Steel Corporation. The others buy, wholly or partly, their ore, or their pig iron, or their semi-finished product, so that there are no two plants that are integrated just to the same degree. The two main causes for differences in cost are, therefore, differences in size, in the case of factories; and this together with integrations, in the case of plants. But as the degree of integration, like that of size, shows itself in the size of the capital, we are justified in saying that the cost of production depends on the capital employed, in a manner, however, which is quite complex, if the vertical integration is also taken in consideration.

In conclusion, it will be shown presently that the investment in the tools of production, per unit of product, is the smaller, the greater the capital is. The above table from Bulletin No. 341 contains also some examples.

5. What causes bring about the emergence of the optimum size? The large-scale producer has very little advantage in securing his raw materials because most of them are either traded on exchanges or have such a well-known market price as to put him on a parity with the small-scale producer. He has very little, if any advantage on the marketing side, because the small-scale producer need not depend so much on others, nor on costly statistics and records. The source of the law is found on the producing side. The cost of production decreases, but at the same time an opposing force is set in motion and the result of both is the emergence of the optimum size.

Man's unaided capacity for labor is very small and limited in a great many respects. For instance, he can

neither lift a great number of pounds, nor can he lift it to a great height. In order to increase his capacity, man employs tools. A rope and a pulley enable him to vastly increase the load and the height of the lift. A relation exists between the cost of a tool, its size and the increase in capacity which it makes possible: It is as follows: *The larger the size of a tool, the smaller is its cost per unit of capacity.*

Take for instance, the casks and tubs used so extensively in many lines of business. The capacity of a tub to hold a fluid is proportionate to its volume, but its cost depends on the amount of lumber it contains and is, therefore, proportionate to its surface. A barrel of twice the capacity does not contain twice the amount of lumber (or twice the surface) but only about 40 per cent more, so that an increase in price of 40 per cent purchases an increase in capacity of 100 per cent. Consequently, a cubic foot of capacity costs less the larger the barrel is.

Exactly the same applies to a great many other tools, or fixed commodities, like warehouses, freight cars, steam boilers, and engines. In all these cases the result emerges from the fact that the capacity of this group of tools depends on one property (on the volume) while the cost depends upon another property of the tool (on the surface) and that, according to a theorem of solid geometry, the volume of a body grows faster than the surface if the linear dimensions are increased.

In the case of other fixed commodities, two other physical properties give rise to the phenomena. For instance, the capacity of iron bars to resist pressure or to carry weight depends on one of its properties, its resistance or elasticity. The cost depends on another property, roughly, on the weight. But physicists show that their elasticity increases much faster than the weight,

and, therefore, the carrying capacity per pound costs the less the larger the size of the bar.

In general, it will be found that the property of a fixed commodity in virtue of which it increases man's capacity for the work is not the same as the one determining its cost and that the former increases much faster than the latter if the size of the tool increases.

Other, but similar relations show in the case of the steam engine. The cylinder walls are a source of loss of heat to an enormous extent. But the cylinder walls, the surface of the cylinder, increase slower than the volume, or the capacity of the engine. Therefore, the loss due to it is comparatively smaller in a large, than a small engine. The consumption of coal per horse power per hour is three pounds or even more in small, two pounds in large, and only about one pound in the enormous marine engines. In most manufactures the expense for coal constitutes from 10 to 20 per cent of the total cost of production and the tremendous advantage of the larger tool, the larger engine, would in itself prove the existence of one of the two opposing forces.

A similar result is seen in the dynamo electric machine. This is a machine which transforms mechanical energy into electric energy. The transformation is accompanied by loss of energy due to a great variety of causes. Among others a part of the mechanical energy is converted into heat in the armature and the electromagnet, a part is lost in friction in the brushes and the bearings, and a part sets up electric currents in the machine which cannot be utilized. All these losses can be figured and the formulae based on the laws of electricity and mechanical energy clearly show the relative advantage of larger machines.

The tools of railroads consist of rails, cars, and engines. The saving due to larger engines has already

been noticed. Heavier rails decrease materially the cost of maintenance, larger cars can be handled more economically than smaller ones. A larger mileage is operated more cheaply than a smaller one, as the general expenses per mile decrease.

So much for the force which is the source of the law of increasing return. Now we must investigate the force which opposes it and ultimately overcomes it so that as the result of both the law of the maximum rate of return, and ultimately that of the decreasing return, emerges.

Every tool has a property in virtue of which it increases man's capacity to labor, as shown above. But it has many other properties, and one or some of them set up disadvantages wholly disconnected with the capacity under investigation. For instance, a lever increases man's capacity to lift weights, and the more disproportionate the two arms are, the greater is the increase in the capacity. There is no limit to this. When Archimedes said he could lift the earth from its hinges if only he were given a fulcrum for a huge lever, he was right, theoretically. But practically he was quite wrong. Unfortunately a lever has weight itself. This is disregarded in the law of the lever in physics, but cannot be disregarded in economics. The longer the lever, the heavier it gets, and at last a length is reached beyond which it becomes unmanageable to man. A similar condition exists with rope and pulleys, where at last the friction counteracts all theoretical advantages. And the same holds good in the most complex factory. The occasional stoppages of a factory with huge machines, are much more costly than those in two factories with smaller machines. Moreover, there are innumerable such forces that no one can foresee, and which only experience brings to light. The American Tobacco Company was

very successful in large-scale production of cigarettes and chewing tobacco, but when it applied it to that of Havana cigars, it was a total failure for causes which nobody could foresee, and the plants had to be disintegrated into their original units.

The many attempts at large-scale production in the straw board manufacture proved failures. The largest electric city lighting plant cannot always underbid the small plant of an office building, because the exhaust steam can be used for heating purposes there. In regard to railroads, the late Mr. E. H. Harriman has given the following explanation: [4]

> Did you ever ride in the cab of one of the modern freight locomotives? Well, you probably noticed the swaying back and forth that accompanied the drive of the pistons. That meant that the centre of gravity had crept up just about as high as it could go without having the engine topple over when it got into action. It told you that we had gone as far as we could in building engines up into the air. Now, if you will think a minute you will see that there is obviously a limit in length of fire-box beyond which it is impossible to fire an engine. And we have reached that limit as well. So there you are. If we increase our car capacity we increase the unproductive dead weight that is to be drawn disproportionately to the increase of the load, and in so doing we are making demands upon tractive power that has already reached the limit of its development.

In downtown office buildings, the number of elevators increases with the height of the building. But they cause a waste in the rentable space. For this and other reasons there is a certain height of an office building which gives the maximum rate of return. In St. Louis it is believed that a twelve-story steel, or an eight-story reinforced concrete building gives the best results. In transportation, the length of the railroad depends largely as to how far bulk need not be broken; therefore, the roads still extend only from the Atlantic coast to the Mississippi river, because as yet there is not enough through traffic for a single road from coast to coast.

4. The Financial Chronicle, March 23, 1907, p. 660.

In blast furnaces [5] large size has many advantages: economy of installation, of labor, and administration per unit of product, and the fact that the proportion of the heat-wasting surface increases much slower than the contents, due again to above geometrical law. But here, too, other properties, disadvantages, exist that grow apace, faster at last than the advantages, so that a limit is reached. The width at the bottom is now generally 12½ feet, and the most economical height is considered to be 80 feet. These results have only partly been ascertained by an investigation of those many countervailing problems, they are largely the result of experience.

In agriculture it is easily seen that there is an amount of labor that will yield the maximum. The purpose of plowing the land, and even of most of the fertilizers, is to put the surface of the land in the proper *physical* condition so as to permit the free passage of water and air. If the soil is not broken up at all, neither water, nor air can freely enter. If so much labor is expended as to break up the soil into such small particles as to permit it to coalesce on its own accord, the impenetrable surface restores itself. Between these two extremes, both yielding zero, as it were, there is an amount of capital and labor that will put the soil in just the best shape to permit the free passage of water and air, and that amount of labor will yield the maximum return.

There are a great many additional causes for the emergence of the law. With the increase in the size, labor per acre is less, less horses are needed, less machinery, altogether a smaller capital per acre, less for building, less for fences. But the countervailing influence also grows with the distance of the farmhouse from the different parcels of land, as Schmoller [6] has already pointed out.

5. Encyclopedia Britannica, art. Iron and Steel. In the Steel report, Pt. 3, p. 80, a similar view is stated.

6. Loc. cit. See also G. F. Warren, Farm Management, pp. 264, 265, and particularly chap. VII, where a wealth of data on the optimum size all over the United

But even here, as in industry, the scientific study of this problem has not succeeded in illuminating all obscure points, and we are still largely guided by experience. Agriculture, being an old industry and being practiced by millions, has naturally an enormous fund of experience, and every district may well be relied on to know the optimum size. For instance, as regards the farms in the Ozarks, the following statement is made:[7]

> The operation of a general farm with much less than forty acres of land for crops is exceedingly unsatisfactory, regardless of the location of the farm, whether among the valleys or among the hills. Size of business is an important factor in farming throughout this area, but it is also true that the limit to the number of acres of crops which can be profitably included in one farm by the average operator is reached more quickly with farms of rough and stony character than in the case of farms with land more easily cultivated, and perhaps this limit has been reached by some of the larger hill farms.

II. The Theory

1. At the outset we must adapt the present laws of diminishing and increasing returns for our purposes. The customary way of showing their emergence is as follows:

Take *one* and the same piece of land and employ on it two or more ever-increasing amounts of capital in *two* or more successive years. The successive crops will exhibit the laws of increasing or decreasing returns as the case may be. In this manner of treatment only the physical quantities of the successive crops can be compared because as Marshall puts it:[8] "It is important to remember that the return to capital and labor, of which the law speaks, is measured by the amount of the produce

States is to be found. On the influence of distance in the case of cattle production, see Bulletin No. 588, J. T. Tardine, pp. 10, 11.

7. Bulletin No. 941, H. M. Dixon and I. M. Purdon, p. 14.

8. Marshall, Principles, p. 229.

raised, independently of any changes that may *meanwhile* take place in the price of produce." For instance, if the returns are 25 bushels the first year, and 20 bushels the next, they would exhibit a law of diminishing returns. But if the prices per bushel are $1.00 and $1.50 respectively, so that the values of the crops become $25 and $30 respectively, the values would vitiate the emergence of the law in that they would show in this case an increasing return; and if several years are taken the values would show ordinarily no law of any kind. If we lived in a world in which prices did not change, but remained always the same, the values would exhibit identically the same laws as the physical quantities; because the proportions between the figures of a series do not change, if each figure is multiplied by the same amount. If, for instance, the successive crops are 25, 20, 16, 13, 11, and the unchanging price is $2, the series of the values would be $50, $40, $32, $26, and $22; and would exhibit the same law of diminishing returns as the series of crops measured in bushels.

The disadvantage of this customary method of showing the emergence in physical quantities lies in this: Our account books show values in money, and not physical quantities in bushels. Therefore, there are neither experiences nor experiments available to prove these laws, and the text books contain only schematic figures.

There is, however, a second manner of showing the emergence which obviates this serious drawback.

Take *two* or more pieces of land of identical quantity and quality — which can easily be done by dividing one piece into two or more equal parts — and employ on it in *one* and the same crop year, two or more increasing amounts of capitals. The price per bushel of the crops on the various plots will of course be the same, there is no "meanwhile" here at all, so far as these various crops

are concerned; a bushel of the crop on the first plot is worth identically the same as a bushel of the crop on the second, or third, or any other plot; neither the inequality of the seasons, nor any other change will differentiate one plot from another; in brief, the time element as the cause of change is entirely eliminated. The only thing that differentiates one plot from another is the difference in the capitals employed on them. Any law that is exhibited by the quantities, will also be exhibited by the values of the crops.

Moreover, an additional concept will be introduced. The customary schematic illustration of the laws of returns is best shown in a table of three columns. The first contains the increasing series of capitals, the second the produce, the third the differences of the figures contained in the second column and which are assigned and allotted to the differences in the figures of the first column, to the successive "doses" of capital. Here we shall add a fourth column. It will contain in each line the produce per unit of capital, or rather per hundred dollars of capital; in other words the *rates* of return, the rates of profit, realized on these various capitals. In their nature each figure in the fourth column is a ratio of the two figures on the same line in the second and first columns respectively, expressed in per cent. This fourth column is so important for our purposes that we have frequently omitted the second and third columns and just show the comparison of the capitals and the respective rates of profit realized on them.[9]

Economists have constructed another pair of laws of returns based on tendency, on time. A law of decreasing returns is supposed to hold in time for agriculture, and

9. Marshall, Principles, p. 231 n. gives an experiment on four plots. Carver, Distribution of Wealth, p. 58, Table A, omits col. 3 and shows col. 4. Taussig, Principles, vol. ii, pp. 57–59, treats the problem of rents in both manners, but none recognized that in the second manner of treatment the values instead of physical quantities may be taken, and thus the financial statements of businesses be used in support of the theories.

one of increasing returns for industries. The results obtained are wrong, or as Marshall expresses it "unsatisfactory." [1] He also suspects the source of the error, namely, that the concept of a supply curve in *time* has three, and not two dimensions, and those theorems based on a descending supply curve are obviously invalid.

2. It has been shown that larger capitals permit a smaller investment per unit of production for every constituent part of the capital, if the tools are of *larger* size. Nothing has been said what the result would be, if the larger capital is used, not for larger tools, but for a greater number of tools of the same size. What would be the result, e.g., if a factory of $200,000 just duplicates the appliances of a factory with a capital of $100,000; in other words, if the larger capital consists in more, but not in larger tools than that possessed by the smaller capital.

Two engines of one horse power each can do pieces of work which one engine of one horse power cannot do, and similarly with two laborers. A factory with twice the working capital can accept orders which the smaller one must refuse. If the times are dull, this is indeed an advantage. But here we suppose normal times, that is to say a condition in which the business offered equals the capacity of the factories. Therefore, there is no advantage in this feature at all.

If, however, we define a larger capital to mean larger tools, then the examples show that not only is the investment per unit of output smaller in the case of larger capitals, but that the cost of production of larger tools, of larger capitals is smaller. Under the term larger capital, we shall mean one consisting of larger tools and not one of more tools of the size of the smaller capital.

1. Marshall, Principles, p. 519, and note p. 520.

For capitals thus defined the following law of increasing rate of returns holds for every constituent part of the capital:

In every production, each of the constituent parts of the capital exhibits a law of increasing returns, in that its successive doses earn an increasing rate of profit.

The interaction of the different constituent parts of the capital forms a barrier which brings this increase in the rate of profit to a dead stop at a certain point. Take again the case of working capital, particularly raw material. There is an interaction between it and the fixed assets. The latter can work up into finished products only a certain, clearly determinable, amount of raw material. If there is more of the latter then this amount of the capital invested in it is "dead," it gives no return at all. Up to that point the successive doses of the capital invested in raw material exhibit the law of increasing returns. Every further dose shows no return whatsoever, and similarly with all other constituent parts of the capital. Therefore, the manufacturer will be careful to invest his capital so that not a single dose of any of the constituent parts of his capital shall be "dead." If his doses are $100 each he will in making the plans for his factory gradually allot it to that constituent part which in virtue of the increasing return yields the highest rate and is not yet checked by its relation to the other parts. If he has done this planning well, the completed factory will exhibit such an interaction of the constituent parts of the capitals as to result in the following law:

In a properly arranged business the rates of profit on the marginal doses of all the constituent parts of the capital are equal, and this gives the maximum rate of profit on the whole capital.

This is obvious. If a marginal dose would give a

higher rate, if taken from one and invested in another constituent part, this of course would be done. The business man desires to make the maximum rate of profit on his capital and the above arrangement gives him a higher rate than any other.

The above law of production that there is an arrangement of the constituent parts of a capital which gives the maximum rate and that this stage is characterized by the equality of the rates on the marginal doses of the constituent parts, is a counterpart of Gossen's celebrated law which holds in consumption.

G. F. Warren [2] gives a happy illustration of the emergence of the law. He pictures a bucket that has staves of different lengths, each stave represents the marginal rate of a capital item. The profit is presented by the water the bucket contains. Of course the volume of the water it can hold, the profit it can yield, is determined by the shortest stave. The additional lengths of the other staves contribute nothing to the volume of water, to profit. The maximum return is reached if the marginal rates, the staves, are equal. The above law is one of the many cases of parallelism existing between the phenomena of production and those of consumption, but they cannot be given here.

In view of this interrelation it is clear that if one component part of the capital is known, or assumed, every other component part is determined. If, e. g., the size of the factory's engine is known, the size of the building, the amount of the working capital and every other component part is determined if the factory is to be subject to the law of equilibrium.

In the last twenty years the recognition that some balance exists between the constituent parts of a capital has gradually evolved, particularly in the writings of

2. Farm Management, p. 171.

T. N. Carver,[3] but the parallelism with Gossen's law has not been noted, nor its exact formulation.

If, then, we compare with each other the returns on equal capitals engaged in the same business we shall find great differences. Those whose constituent parts conform to the above law will yield the maximum rate of profit. The rate will be the less the more the parts deviate from above equilibrium. Two capitals in the same business, both of which are invested in items in equilibrium, will yield the same rate. If all parts except one are in equilibrium and that one increases toward the equilibrium and beyond, the rate of profit on the whole capital will increase till the equilibrium is reached and decrease thereafter.[4] This is most frequently seen in the case of working capital. In a new country farmers have very rarely a sufficient amount of it, or what comes to the same thing, the amount invested in land is too large as compared with the balance, the working assets. The same holds in old countries particularly where a metayer system prevails. The temptation of the tenant to lease too much land for his capital seems irresistible. The optimism of the business man does not, and cannot prevent the proper investment in fixed commodities, but

3. See also Arthur S. Dewing, "The Law of Balanced Returns," American Economics Review, 1917, pp. 755 ff.

4. This phenomenon has been magnified into the original and principal source of the laws of increasing and decreasing return. Marshall, Principles, p. 230.

It may not be out of place to call attention again to the fact that the laws of return used here refer to the fourth and the second, but not to the third column of our schematic representation. The second column shows that the returns *increase*, the third column shows that while they increase, the increase is getting gradually smaller. Here this phenomenon, based on the second column, is called a law of *increasing* returns. In the present economics literature the phenomenon, based on the third column, is called a law of *decreasing* returns. In the terms of mathematics, our description refers to the ordinates of the function, or to their ratio to col. 1, which are given in col. 4, and they increase indeed; the present customary formulation refers to the differences of successive ordinates, and these differences become indeed smaller, the nearer we come to the maximum. The new form is simpler, and as the results show, more fruitful. Finally: Both formulations are directly the results of the existence of a maximum.

it frequently induces him to attempt business with insufficient working capital; and this results in returns of less than zero, in other words, losses. Insufficient working capital is the main cause of manufacturing, commercial, financial, and agricultural failures. Many violate the law in the beginning, particularly in farming. In industries the start is usually in accordance with the law of equilibrium with a sufficient amount of working assets. But, "by an optimism due to rising prices and the hope of great profits through increased production," the working capital is gradually converted into fixed assets and the deficiency borrowed from the banks, and this is, if done on a large scale, the first step towards a condition of crisis,[5] because if the loan has to be paid when prices are deflated, the deficiency of working capital becomes obvious and the business goes on the rocks.

In general, a factory that has grown piecemeal is of necessity poorly balanced. This is well known to business men.

The task of building a factory with a certain capital so that the proper equilibrium may exist between the constituent parts is not a simple one. The number of items is so great that the task seems almost equivalent to solving a set of difficult equations with several hundred unknown quantities. Besides, some of the forces that enter into the problem are obscure. Therefore, a strictly balanced plant does not exist.[6]

The theories advanced here hold not only for the business of industries, but also in every particular for the *business* of farming. E. g., in Bulletin No. 757[7] there is

5. A. Wall in a study of credit criterions, Federal Reserve Bulletin, March 1, 1919, p. 231. This is really self-evident. All gains, all losses impinge upon the current assets.

6. The same difficulty is encountered by every individual who necessarily tries to arrange his consumption according to Gossen's law. This difficulty is of great importance to the theory of consumption. I believe it explains the emergence of standards of life and also that of ethics.

7. Hennis and Willard on Grain Farming in North Dakota, p. 10.

a clear statement of the loss due to the increase of a component part of the capital beyond the equilibrium. In Bulletin No. 726 [8] is an excellent statement of the difficulty of ascertaining just when the equilibrium is reached.

3. In what follows only balanced factories will be compared with each other.

It was shown that each constituent part of the capital obeys a law of increasing returns. If then the capital of a factory is larger than that of another, this series of increasing figures is carried further in each of the component parts, in that the whole of the larger capital will yield a larger return not only absolutely, but also relatively, than the smaller one. In other words the rates of return on the invested capitals of different plants engaged in the same industry are the greater the larger the capitals are.[9] This is the old law of increasing returns expressed in a more convenient form.

In the first part a variety of causes was given to account for the fact that the law of increasing returns comes to a stop at the optimum size. As these causes were not known before two other views gained prominence. One was enunciated by Karl Marx. He teaches that the greater the capital the higher the rate of return, the greater the advantage the possessor of the largest plant in any line of industry, so that the smaller plants find it increasingly difficult to maintain themselves, and ultimately a monopoly emerges in every line of industry. Competition disappears. But monopolies are "incompatible with their capitalistic integument" and then "the knell of capitalist private property sounds." [1]

8. Moorhouse and others on Sugar Beets in Colorado.

9. Even this obvious conclusion from the present law of increasing returns overturns the present theories of profit, which are based on the assumption of a normal, an average rate.

1. Karl Marx, Capital, English edition of Kerr & Co., vol. i, chap. 32, p. 835. He assigns, however, a different cause for the law of increasing returns.

Thus collectivism will not come suddenly, but as the inevitable result of the limitless law of increasing rates of return.

Another opinion advanced was this: There is no limit to the law so far as the "marketing" side of business is concerned. There is also no limit to the "productive" side, but beyond a certain amount of capital any further increase gives only little further increase in the rate of return. This is the view of A. Marshall.[2] It differs from the Marxian theory only in degree and not in kind. If it were true, collectivism would emerge just as inevitably, but the evolution would take somewhat more time.

The view established here is that in consequence of forces that were described in Part I, there is a limit, and that in virtue of the interaction of those forces with those mentioned before a law of the maximum rate of return, or a law of the optimum emerges, which may be stated as follows:

At every stage of development of any industry the law of increasing rate of returns holds up to a certain size of the capital, which yields the maximum rate for that industry. Beyond that size a law of diminishing rates of returns holds.

It is really only necessary to prove the law of optimum because mathematics teaches, and the customary geometric representation illustrates that every optimum is preceded by a law of increasing and followed by a law of decreasing returns. It is important, however, to note that these laws of return are those of column 4 of our schematic illustration.

The theory of the emergence of profit is, then, as follows:

Profit emerges out of differences in capitals, due to the

2. A. Marshall, Industry and Trade, p. 249. It is inconceivable how from this view he can deduce, as he does, the survival of small businesses.

law of increasing returns, which in turn is based on the superiority of larger over smaller tools, as to capitalization per unit of output, and as to cost of production.

The emergence of profit is not due to capital as such, nor to its productivity, however defined, nor to abstinence, nor to waiting, nor to a preference of present over future goods, nor to great managerial ability, nor to the labor of the manager, nor to that of his workmen, nor to the exploitation of the latter, nor to the institution of private property. This appears from the following three facts:

1. If all the factories in an industry have the same size of capital, none of them make any profit except they form a trust, which is excluded here.[3]

2. If the factories have different sizes, the marginal producers, the producers with the smallest capital, make no profit.

In these two cases all those concepts are, or may be, present; nevertheless, profit does not emerge.

3. In the larger factories of the second case they are, or may be, present at the same rate, nevertheless the rates of profit differ.

There is no normal rate of profit as the older theories assume. Their primary data are correct, the rates differ. But they ascribed the whole of the differences to fortuitous causes and formed a secondary datum by "adjusting" to an equality the primary data, and thus even the differences which were not due to fortuitous causes were extinguished. But it must be stated that economists have already expressed doubts as to the propriety of this procedure.[4]

3. See note on the mathematical theory of competition in the present writer's "Suggestions on the Theory of Value," Quarterly Journal of Economics, August, 1905, p. 583.

4. Taussig, Principles, vol. ii, p. 123. Differences in the cost of production were always known to exist in agriculture. Therefore it is natural that the first attempt to base on them a theory of profit should have emanated there, namely Ricardo's theory of rent. For its short-comings as well as its connection with the present investigation, see p. 124, ibid.

Karl Marx finds the source of profit in the exploitation of labor. His primary data are quite correct — the labor costs differ, but the manner in which he forms from them the secondary data [5] requires the most careful attention because naturally with its validity stands or falls his whole theory. He first gets rid of the influence of fortuitous circumstances, like occasional idleness or lack of skill. This is quite in accordance with the procedure followed by the exact sciences. Then he notes that there still remain considerable differences in costs. For instance, he points out that the cost of a hand loom weaver is probably twice as great as that of a power loom weaver. We have stopped here and taken these differing costs as our secondary data in the industry of weaving. But Karl Marx does not do that. He says that these differences do exist, but that they are "socially" unnecessary. He thus gets rid of the costs of the small-scale producer and forms his secondary data by averaging the costs of the large-scale producer. His secondary datum for an industry is, then, that there is only one cost, the socially necessary one, as he calls it. But, of course, the label has nothing to do with the contents of the case.

The secondary datum as formed by Marx and used as the basis of his theory extinguishes the most significant feature, namely, that the costs differ. Of course, if we *suppose* that all factories of any industry have the same costs, then profit will indeed not emerge except the factories form a trust and exploit labor as well as the whole public. But this is clear from the beginning, being a direct result of his secondary datum, and there is no further need for thousands of pages to prove it, particularly as it has been known before him. These secondary data describe a condition of society which does not

5. Karl Marx, Capital, Kerr edition, vol. i, pp. 45, 46.

exist under private ownership. It is conceivable, but highly improbable that communism will have nothing but factories of the optimum size in all industries,[6] in which case the costs of all factories will be equal. Therefore, the Marxian theory does not *prove* that we are headed toward communism. It simply *assumes* in its secondary data that a state of communism exists or rather one that may be conceived to exist in communism.[7]

4. In a credit operation the relation between borrower and lender is that of a partnership in which one partner, the lender, enjoys certain preferences. They are of a great variety and need not be given here. The lender's share of the profits is called interest.

If a manufacturer goes into business by borrowing just as much as he owns himself, his profit, in virtue of the law of increasing returns, will be more than twice as much as he would have realized on his own money alone. He can, therefore, pay the lender one-half of the profits and still be the gainer. On the other hand, the lender receives also more than he would, if he were to go into business with his money. For instance, if the borrower and the lender went into the manufacture of shoes in 1914, each for himself would have realized 13 per cent. By lending the money to the borrower, and staying out of business, the latter would have made 17 per cent on his money, and would have been able to pay the lender also 17 per cent, so that each would have profited to the extent of 4 per cent. But the lender is not entitled to 17 per cent. He can only expect to receive what he would have made, if he had gone into business himself, namely, 13 per cent. Then the borrower would

6. In agriculture this is quite impossible.

7. Altogether this is a fine example for Secrist's complaint (loc. cit.): "It is secondary data which are generally used and unfortunately too often without a clear idea as to their merits for the purposes in mind."

have made 21 per cent, a gain of 8 per cent. But the lender's $100,000 enjoys some preference over the $100,000 of the borrower, therefore he will be satisfied with less. The exact rate will depend on the nature and extent of the preferences accorded him by the borrower. If the lender is satisfied, e. g., with 7 per cent, the borrower makes 27 per cent, while without the loan he would have realized only 13 per cent. Here is a net gain of 14 per cent, or to put it more expressively, the borrower in virtue of the loan makes more than twice as much as without it, and he makes almost four times as much as the lender.[8]

Interest is the lender's share of the profit, and therefore it cannot emerge from any other source than profit, namely, from the law of increasing returns. The concepts which do not account for the emergence of profit, and which were enumerated above, do not, cannot account for the emergence of interest. More particularly: It is not due to the labor of the manager or of his workmen. The loan enables him to buy larger machines, he does not buy more machines than without the loan. Moreover his labor is measured, not by foot pounds, or any other mechanical means, but by time. With or without the loan he devotes in the example the same number of hours every day to the business of manufacturing shoes. He loses nothing, the increased profit is a pure gain to him. It is also a pure gain to the lender because he is not in business at all. This seems to be in the nature of a miracle, but economics is full of such miracles, as for instance, in the operation of buying and selling, where also both sides gain and nobody loses anything.

If a business man with a capital of $100,000 borrows $100,000, so that there is $200,000 employed in his

8. This is even *after* allowing himself wages.

business, and if he can properly manage this business on $200,000 capital, then it is clear that his managerial capacity is larger than the one needed for a capital of $100,000. Managerial talent is a constituent part of business, but, of course, not of the capital. Nevertheless, the law of equilibrium which holds for the constituent parts of capital may be applied also to managerial talent. And here deficiencies and excesses occur frequently, and it cannot be otherwise under the institution of private property. The manager or owner may be, and frequently is too big or too small for his job. In the above case the manager is too big, or the capital of $100,000 is too small for the equilibrium. The only way to establish a better equilibrium is to borrow the other $100,000, and thus the law of increasing returns is put into motion and yields the pure gain to borrower as well as lender. The lender gives no labor for it, he loses nothing, or to use Warren's illustration, his labor, time, and talent staves have the same length before and after the loan. By increasing it till it equals the former, the bucket, the business, "holds" more profit, although none of the three staves have been increased in length.

The size of a loan may be measured in two ways. First, it has an absolute size, in dollars. A large loan, measured thus, can easily be broken up into small ones, and small amounts can be combined into a large loan. These operations need the assistance of a banker, but his charges are part of the expense of raising capital and not a part of the interest payments. The size measured in this way, has, therefore, no influence on the rate from the point of view discussed here, but it is, indeed, influenced by the former in virtue of the laws of price. The second manner of measuring the size of a loan is relative by comparing it with the amount of money owned by the borrower. In other words, the loan is

measured as a proportion of the borrower's net assets, and in the case of commercial loans, as a proportion of the borrower's net current assets. The lender is really not interested in the kind of business to which he makes the loan, except as it has a bearing on the safety of the loan. The latter feature has a profound influence on the rate and the smaller proportion the loan is of the borrower's assets the less is the rate. Taking loans of the same relative size the following theorems follow from the differences in safety:

There is no normal rate for loans, just as there is none for profits. A loan to the business of the optimum size yields the minimum rate of interest. The rates on loans to other sizes of business move in the reverse order to that of the rate of profit. They will show a law of decreasing returns where profits show a law of increasing returns and vice versa. The (minimum) rates of the optimum sizes of different lines of business decrease with the increase in the optimum size because their rates of profit increase.

The element of time also has an influence on the rate of interest because time may change the factor of safety. Ordinarily, the rate is the higher the longer the loan runs, as e. g., in the case of farm and building loans. If the safety is not thought to suffer in time, as in the case of nations, and even of public service corporations, like railroads, the rate will be the same, irrespective of the length of the time; as witness the British Consols, the French Rentes, or the 100-year mortgage bonds of some of our trunk line railroads.[9]

The most important effect of time is seen in the difference of rates between commercial loans and "long

9. In recent years the borrowing states as well as the lending citizen seem averse to loans running a very long time. The western municipalities frequently make loans for only a limited number of years, and even serially as if they shared the view of Thomas Jefferson, that no loan should be permitted to run longer than the life of a generation, which in Jefferson's time was 21 years.

time" loans. The former is defined as a loan for a season or a shorter time. A commercial loan for the peak of the season commands the lowest rate, one for the whole season the highest rate, but it is ordinarily lower than long-time loans. The peculiar characteristic of the commercial loan is due to the fact that the lender is satisfied with a remuneration which does not equal the agreed-upon rate of the loan for a year, or a season, but only that ratio of it which the length of the loan bears to a year. If, for instance, the loan is for a month, the lender receives only one-twelfth of a year's interest. But every dollar in business realizes the same profit, actual profit (and not pro rata profit), whether it "works" the whole season or only a day.[1] Such loans obviously yield, comparatively speaking, enormous profits to the borrower. For instance, on a 4 per cent loan, that runs only for a single day of the year, the borrower makes more than a thousand times as much as the lender, hence the profound importance of commercial loans for business and the whole economic life of a people.

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1. This is obvious from the definition of capital given, particularly if the Federal Trade Commission had used the highest amount of commercial loans in force during the year instead of the average. Only then can a factory that uses commercial loans be compared with one that does not, or not to the same extent. If this had been done, some of the deviations from our laws would not have appeared in the examples at all. This shows again that the formation of secondary data requires the utmost care and caution.

The phenomena mentioned above show that the element of time enters the problem of profit and interest, but that it is not, and cannot be the cause of their emergence as some of the older interest theories have it. Profit, and consequently interest, are concepts of two dimensions, size and time. This is obvious from the very first line of every profit statement which gives the sales "during the fiscal year." The selection of the year as the unit of time is due to most important economic considerations, and is not purely a matter of practical convenience as Bohm-Bawerk thought. See the present writer's, "Einige Betrachtungen über Bohm-Bawerk's Positive Theory des Kapitals," Jahrbücher für Nationalökonomie und Statistik, July, 1911, p. 88.

ETHICS AND THE ECONOMIC INTERPRETATION

SUMMARY

Bearing on problem of scope and method, 454. — Both economics and ethics deal with value, 454. — Economics as a pure science has given too little attention to separation of constants from variables, 455. — Sense in which wants can be considered as data, 455. — Economic interpretation as a theory of conduct, 459. — Are human motives predominantly economic, 460. — Are they predominantly instinctive, 466. The adaptation theory, 469. — The pleasure theory, 469. — Economics as a study of the adaptation of means to ends, 472. — What becomes of ethics, 476. —Three kinds of treatment of conduct, 481.

CERTAIN aspects of the doctrine of the "economic interpretation" form a natural and convenient avenue of approach to a consideration of the relations between economics and ethics and throw light on the scope and method of both these divisions of knowledge. It is this more general problem which is the object of attack in the present paper, which is not primarily an attempt to make a contribution to the technical discussion of the famous theory named in the title. This theory is useful for present purposes because it suggests the fundamental question as to whether there is really a place in the scheme of thought for an independent ethics or whether ethics should be displaced by a sort of higher economics.

Economics and ethics naturally come into rather intimate relations with each other since both recognizedly deal with the problem of value. Two of these lines of relation are especially interesting in their bearing upon the vexed problem of scope and method in economics. In the first place, the separation between theory and practice, or between science and art, offers special diffi-

culties in this field, for reasons which it would carry us away from our central theme to elaborate here. The unfortunate but familiar result of this fact is that economists have spent much of their energy in disputations as to whether the science is properly concerned with facts and cause-and-effect relations, or with "welfare." In other provinces of science such controversies would seem absurd.

There is another and deeper source of confusion in the conception of the method of economics which also involves the relation between economics and ethics and which will lead directly into the problem of this paper. It relates to the ultimate data of economics, regarded as a pure science, dedicated to the search for truth and purified of all prejudices as to the goodness or badness of its principles and results. In this respect also economics has been far behind the natural sciences. Insufficient attention has been given to the separation between constants and variables; needless controversy and wasted effort have resulted from overlooking the fact that constants from one point of view may be variables from another, particularly that factors which are sensibly constant over short periods of time must be treated as variables when longer periods are under discussion.

Of the various sorts of data dealt with in economics no group is more fundamental or more universally and unquestioningly recognized as such than human wants. Yet one main purpose of the present discussion is to raise serious question as to the sense in which these wants can be treated as data, or whether even they are properly scientific data at all. We propose to suggest that these wants which are the common starting-point of economic reasoning are from a more critical point of view the most obstinately unknown of all the unknowns

in the whole system of variables with which economic science deals. The answer to this question of whether and in what sense wants are data will be found to involve a clarification of the nature of economics as a science, of the nature of ethics, and of the relations between the two. If human wants are data in the ultimate sense for scientific purposes, it will appear that there is no place for ethical theory in the sense in which ethicists have conceived that subject, but that its place must be taken by economics. It will be interesting to observe that in view of a logically correct distinction between ethics and economics the great majority of economists not only, but in addition no small proportion of thinkers calling themselves ethicists, have not really believed in ethics in any other sense than that of a more or less "glorified" economics.

To state the fundamental issue briefly at the outset, are the motives with which economics has to do — which is to say human motives in general — "wants," "desires" of a character which can adequately be treated as *facts* in the scientific sense, or are they "values," or "oughts," of an essentially different character not amenable to scientific description or logical manipulation? For if it is the intrinsic nature of a thing to grow and change, it cannot serve as a scientific datum. A science must have a "static" subject-matter; it must talk about things which will "stay put"; otherwise its statements will not remain true after they are made and there will be no point to making them. Economics has always treated desires or motives as facts, of a character susceptible to statement in propositions, and sufficiently stable during the period of the activity which they prompt to be treated as causes of that activity in a scientific sense. It has thus viewed life as a process of satisfying desires. If this is true then life is a matter of

economics; only if it is untrue, or a very inadequate view of the truth, only if the "creation of value" is distinctly more than the satisfaction of desire, is there room for ethics in a sense logically separable from economics.

In a more or less obscure and indirect way, the treatment of wants as data from which and with which to reason has already been challenged more than once. More or less conscious misgivings on this point underlie the early protests made by economists of the "historical" variety against the classical deductive economics, and the same is true in a more self-conscious way of the criticism brought by the modern "historismus," the "institutional economics" of Veblen, Hamilton, and J. M. Clark. Thus especially Clark,[1] whose position most resembles that herein taken, observes that the wants which impel economic activity and which it is directed toward satisfying are the products of the economic process itself: "In a single business establishment one department furnishes the desires which the other departments are to satisfy." Hitherto the chief emphasis has been placed on the factual instability of wants and their liability to be changed as well as satisfied by business activity. This is usually coupled with a deprecating attitude, a tendency to regard the growth of wants as unfortunate and the manufacture of new ones as an evil; what have not advertising and salesmanship to answer for at the hands of Veblen, for example! From the standpoint of hedonism, which is to say of the economic philosophy of life, this conclusion is undoubtedly correct. If the Good is Satisfaction, there are no qualitative differences, no "higher" and "lower" as between wants and that is better which is smaller and most easily appeased.

1. "Economics and Modern Psychology," Journal of Political Economy, January and February, 1918. The quotation is from page 8.

It is not on any sentimental or idealistic ground, but as a plain question of the facts as to how the ordinary man conceives his own wants and interprets them in conduct that we shall argue against this view of the matter. Wants, it is suggested, not only *are* unstable, changeable in response to all sorts of influences, but it is their essential nature to change and grow; it is an inherent inner necessity in them. The chief thing which the common-sense individual actually wants is not satisfactions for the wants which he has, but more, and *better* wants. The things which he strives to get in the most immediate sense are far more what he thinks he ought to want than what his untutored preferences prompt. This feeling for what one *should* want, in contrast with actual desire, is stronger in the unthinking than in those sophisticated by education. It is the latter who argues himself into the "tolerant" (economic) attitude of *de gustibus non disputandum;* the man in the street is more likely to view the individual whose tastes are "wrong" as a scurvy fellow who ought to be despised if not beaten up or shot.

A sounder culture leads away from this view, to be sure, but it leads to a form of tolerance very different from the notion that one taste or judgment is as good as another, that the fact of preference is ultimately all there is to the question of wants. The consideration of wants by the person who is comparing them for the guidance of his conduct and hence, of course, for the scientific student thus inevitably gravitates into a *criticism of standards*, which seems to be a very different thing from the comparison of given magnitudes. The individual who is acting deliberately is not merely and perhaps not mainly trying to satisfy given desires; there is always really present and operative, tho in the background of consciousness, the idea of and *desire for* a *new*

want to be striven for when the present objective is out of the way. Wants and the activity which they motivate constantly look forward to new and "higher," more evolved and enlightened wants and these function as ends and motives of action beyond the objective to which desire is momentarily directed. The "object" in the narrow sense of the present want is provisional; it is as much a means to a new want as end to the old one, and all intelligently conscious activity is directed forward, onward, upward, indefinitely. Life is not fundamentally a striving for ends, for satisfactions, but rather for bases for further striving; desire is more fundamental to conduct than is achievement, or perhaps better, the true achievement is the refinement and elevation of the plane of desire, the cultivation of taste. And let us reiterate that all this is true *to the person acting*, not simply to the outsider, philosophizing after the event.

In order to substantiate and support the doctrine thus sketched we turn to consider briefly the opposite view, which is that of the "economic interpretation." Historically this doctrine is associated with the so-called "scientific" socialism,[2] but we are here interested in it not in connection with any propaganda or policy, but simply as a theory of conduct, as one answer to the question of the relation between economics and ethics. Our first task is to find out what the doctrine really means.

The somewhat various statements of the theory reduce in general to the proposition that the course of history is "determined" by "economic" or "materialistic" considerations. All of these terms raise questions of in-

2. It would be hard to imagine a more ill-mated team than fatalism as the credal basis for revolutionary propaganda, and a mechanistic philosophy of ruthless force and class war as the background for a moral transformation of the world!

terpretation, but the issue may be stated briefly. In the first place, the course of history is a matter of human behavior, and we shall as already indicated consider the problem in its broader aspect as a general theory of motivation. As to the word "determined," it is taken for granted that conduct is determined by motives; the statement is really a truism. The issue then relates to the fundamental character of motives; are they properly to be described as materialistic, or economic, in their nature? Between these two terms it is better to use "economic"; a "materialistic" motive would seem to be a contradiction in terms; a "motive" is meaningless unless thought of as a phenomenon of consciousness. The opposite view would merely throw us back upon a denial that conduct is determined by motives at all. Without attempting a philosophical discussion of this question we shall take the common-sense position.[3]

Are human motives, then, ultimately or predominantly economic? If the expression, "economic motive" is to have any definite and intelligible meaning, it must be possible to distinguish between economic motives and other motives. The expression is, of course, widely used in learned and scientific discussion as well as in everyday speech, with the feeling that such a differentiation exists, but examination fails to show any definite basis for it or to disclose the possibility of any demarcation which is not arbitrary and unscientific. In a rough way, the contrast between economic and other wants corresponds to that between lower and higher or necessary and superfluous. The economic motives are supposed to be more "fundamental"; they arise out of necessities, or at least needs, or at the very

3. In the writer's opinion a pure-science attitude in psychology leads inevitably to behaviorism, to a discussion of stimulation and response with consciousness out of it — i. e., away from "psychology." But it is false to the facts. Scientists must recognize that we cannot free any science, not even physics, to say nothing of psychology, entirely from subjective elements and formulate it in purely objective terms.

least out of the more universal, stable, and materially grounded desires of men. The socialistic popularizers of the theory under discussion have leaned toward the narrower and more definite and logical conception of downright necessities.[4]

The view of the man in the street, as shown by students beginning the study of economics, and also common in text-book definitions of the science, is that the economic side of life is summed up in "making a living." But what is a living! If by a living we mean life as it is actually lived, everything is included, recreation, culture, and even religion; there is no basis for a distinction between the economic and anything else, and the term has no meaning. At the other extreme would be the idea of what is really necessary, the physiological requisites for the maintenance of life. Even this turns out on examination to be hopelessly ambiguous. Does "life" mean the life of the individual only, or that of the group or race? If the latter, does it include the increase of numbers, or only their maintenance at the existing level, or some other level? Does what is "necessary" refer to conditions under which life *will* be preserved or numbers maintained or increased, or only those under which it *could* be done? and under what assumptions as to the tastes and standards, and the scientific and technological equipment of the people? Even if we think of a population rigidly controlled as to their reproductive function (which is scarcely conceivable), the birth rate necessary to maintain numbers at a constant level would depend upon the death rate and hence would vary *widely* with the scale of living itself. We doubt whether the conception of necessity can even theoretically be

4. Quotations could be multiplied, from socialists and others, to illustrate and prove the statement. Marx, indeed, is typically vague and metaphysical. Perhaps as clear a statement as any is that of Engels: "The determining consideration is always the production and reproduction of actual life." (From an article in the Sozialistische Akademiker, quoted in Ghent, Mass and Class, chap. I.)

defined in sufficiently objective terms to make it available for scientific purposes.

Between these two extremes of what people actually get and what they rigorously require in order to live the only alternative is some conventional notion of what is "socially necessary," or of a "decent minimum." It is obvious that such a conception of a "living" is still more indefinite than the others, and the way seems to be closed to any objectively grounded differentiation between the making of a living and any other kind or portion of human activity.[5]

Another common-sense notion of the meaning of economic activity is that it includes everything which involves the making and spending of money or the creation and use of things having a money value. It will presently be argued that this is substantially correct for practical purposes as far as it goes tho it directly or indirectly covers virtually the whole life activity of a modern man and has to be limited to certain aspects of that activity. It is interesting to ask how much of our ordinary economic activity (economic in the sense indicated) is concerned with things which can reasonably be argued to be "useful" — not to say necessary — if by useful we mean that it contributes to health and efficiency, or even to happiness. If we begin with food, the most material and necessary of our requirements, it is obvious that but a fraction of a modest expenditure for board in an American town would come under this head.[6] And proceeding in order to our other "material" needs, clothing, shelter, furniture, etc., it is apparent that the farther we go the smaller the fraction becomes.

5. The contrast between work and play may come to mind in this connection, but a little scrutiny will show that it affords no help from the difficulty. In a subsequent paper something will be said concerning the economic and ethical bearing of play.

6. A considerably larger proportion may, of course, be "necessary" in the sense that under the actual conditions a person could not obtain and live upon the requisite quantities of protein and calories in the cheaper forms in which they might be had.

And it is not a large fraction of a fairly comfortable income which goes for all these items, if the purely ornamental, recreative, and social aspects are excluded.

Moreover, when we scrutinize the actual motives of actual conduct it is clear that the consciously felt wants of men are not directed toward nourishment, protection from the elements, etc., the physiological meaning of the things for which money is spent. They desire food, clothing, shelter, etc., *of the conventional kinds and amounts*. It is an ethnological commonplace that men of one social group will starve and freeze before they will adopt the ordinary diet and garb of other groups. Only under the direst necessity do we think in terms of ultimate physical needs as ends; the compulsion to face life on this level is equivalent to abject misery. A large proportion of civilized mankind would certainly commit suicide rather than accept life on such terms, the prospect for improvement being excluded. This interpretation of motives, which is the nearest approach to a definite meaning that can be given to the economic interpretation, is almost totally false. It is simply contrary to fact that men act in order to live. The opposite is much nearer the truth, that they live in order to act; they care to preserve their lives in the biological sense in order to achieve the *kind* of life they consider worth while. Some writer (not an economist or psychologist!) has observed that the love of life, so far from being the most powerful of human motives is perhaps the weakest; in any case it is difficult to name any other motive or sentiment for which men do not habitually throw away their lives.[7]

When we turn from the preservation of individual life

7. One of the most serious defects of economics as an interpretation of reality is the assumption that men produce in order to consume. Except for those very low in the economic scale the opposite is as near the truth, and the motives of a large part of even "lower-class" consumption are social in their nature.

to that of the race as a motive a similar situation is met with. Men will give up their lives for the group, but not for its *mere life*; it is for a better or at least a worthy life that such sacrifices are made. The life of the individual is logically prior to that of the group, as our physiological needs are logically prior to the higher ones, but again that is not the actual order of preference. Probably few civilized men would refuse to die for their fellows if it were clear that the sacrifice were necessary and that it would be effective.

But when materialistic interpreters speak of the perpetuity of the group as a motive they are likely to have in mind not this result in the abstract, but rather sex-feeling, the means by which continuity and increase are secured in the animal world. Here again they are squarely wrong; social existence and well-being in the abstract are more potent than sex attraction in any crude interpretation. With sex experience as with food, it is not the thing as such which dominates the civilized individual. His sex requirement is as different from that of animals as a banquet with all fashionable accompaniments is from the meal of a hungry carnivore which has made a kill, or a buzzard whose olfactory sense has guided him to a mellow piece of carrion. It is again a question of fact, and the fact patently is that when the biological form of the motive conflicts with the cultural, aesthetic or moral part of it — as more or less it about always does — it is the former which gives way. Sex debauchery is, of course, common enough, but this also rather obviously involves about as much cultural sophistication as does romantic or conjugal love, tho of a different kind.[8]

8. It is of interest that the conduct which men denounce by calling it "bestial" (in the field of sex and elsewhere) is typically of a sort in which the "beasts" never indulge. Animals are not promiscuous on principle, but merely indifferent to the individual; they are rarely subject to the peculiar notion from which man is as rarely free, that one individual of the opposite sex is for sexual purposes different from others.

On every count this biological interpretation of human conduct falls down; no hunger and sex theory of human motives will stand examination. It will not be denied that human interests have evolved out of animal desires, and are ultimately continuous with them; and an understanding of animal behavior can throw light on human problems, but only if interpreted with the utmost caution. Man has risen clear above, or if this seems to beg any philosophical questions he has at least gotten clear away from the plane where life is the end of activity; he has in fact essentially reversed this relation. It is not life that he strives for, but the good life, or at the ultimate minimum a decent life, which is a conventional, cultural concept, and for this he will throw away life itself; he will have that or nothing. He has similar physical requirements with the animals, but has become so "particular" as to their mode of gratification that the form dominates the substance. A life in which bare existence is the end is *intolerable* to him. When his artificial, cultural values are in ultimate conflict with physical needs he rather typically chooses the latter, sacrificing quantity of life to quality, and it is hard to see how he could be prevented from doing so. We can scarcely imagine a slave society placed under physical compulsion so effective that men would permanently live in it. If they were given the least sight or knowledge of their masters and their masters' way of life, no provision however bountiful for all physical wants would prevent some irrational individual from setting up a cry for "liberty or death" and leading his willing fellows to the achievement of one or the other. It is a familiar historical fact that it is not the violently oppressed populations which rebel, but those whose milder bondage leaves them fairly prosperous.[9] The assump-

9. We have omitted mention of the class struggle historically associated with the economic interpretation. It may be remarked in passing that the effective motive of

tion of the materialistic, or economic, or biological interpretation of conduct is that when men must choose between some "real need" and a sentimental consideration they will take the former. The truth is that when the issue is drawn they typically do the reverse. For any practical social purpose, beauty, play, conventionality and the gratification of all sorts of "vanities" are more "necessary" than food and shelter.[1]

Some attention must now be given to another method of interpreting conduct, closely related to the biological and like it aimed at supplying an objective measure of well-being. This is the theory that man has inherited certain *instincts* which must achieve a substantial measure of successful expression in action or the individual will develop maladjustment, balked disposition and unhappiness. We cannot go at length into the failure of this theory either to explain actual behavior or to yield

insurrection, and especially of its upper-class leadership is essentially idealistic. Revolutions would rarely if ever succeed without the belief that the cause is *right* in the minds of *both parties* to the struggle. The pet notion of Labriola, that people make up sentimental reasons for their acts when their real motives are materialistic will also gain more in truth than it will lose by being inverted. Back of the much exploited economic motive in international antagonisms also, conventional and sentimental considerations are clearly to be seen. What men fight over in war is the conflict between cultures, devotion to which is proverbially unconnected with any objective superiority.

1. This thesis cannot be elaborated and emphasized as it deserves to be. Some reference ought to be made to the most notorious advocate of the opposite view among social philosophers, Herbert Spencer. His work is a development of the principle that all human values are to be gauged by the standard of tending to the "increase of life," which principle he views as axiomatic from the angles of right as well as necessity. Our contention is that actually the increase of life is rather a by-product of activity, in a sense a necessary evil.

It is interesting to note that "quantity of life" cannot be given an objective meaning as a measurable quantity, to say nothing of its ethical character. Life is a highly heterogeneous complex whose elements resist reduction to any common denominator in physical terms. How compare the quantity of life represented by a hog with that in a human being? They are different *kinds* of things. To common sense, a handful of fleas would seem to contain more "life" than a town meeting or the Royal Society, but Mr. Spencer would hardly contend that it represents more "value." The only purely physical measurement of life that is readily conceivable would be a determination of the quantity of energy in ergs involved in metabolic change in a unit of time.

A confusion essentially the same as that of Spencer seems to underlie the contrast between industrial and pecuniary values developed by Veblen and Davenport. There is no mechanical measure of values which will bear examination, and we cannot compare values or kinds of value without having something to say about value-standards for reducing to common terms magnitudes infinitely various in kind.

ideal requirements, and fortunately it is unnecessary to do so as the doctrine is now properly passing out of favor.[2] The significance to be claimed for the theory is that of supplementing the biological interpretation. Certain acts not now useful in the biological sense are assumed to have been so in the past under different conditions, and the organism has become so adjusted to them that its normal functioning depends upon their continued performance.

If instincts are to be scientifically useful, it must surely be possible to get some idea of their number and identity. But there has always been substantially unanimous disagreement on this point. Logically the choice seems to lie between a meaningless single instinct to do things-in-general and the equally meaningless hypothesis of a separate instinct for every possible act. Between these two views is a free field for arbitrary classification. Such fairly concrete lists as have been given consist chiefly of enumerations of the possible alternatives of action in possible types of conduct situations, and largely reduce to pairs of opposites. For a single illustration, an animal in danger may fight or run. Hence our theorists come forward with an "instinct" for each of these types of reaction. This of course tells us nothing of what we want to know which is, *which one* of the possible reactions will take place. It is not enlightening to be told that conduct consists in choosing between possible alternatives.

A mere classification of feelings or cravings has some interest, however void of scientific utility it may be, but the psychologist can hardly claim to have "discovered" the emotions. In this connection it is interesting to con-

2. Cf. Ellsworth Faris, "Are Instincts Data or Hypotheses," American Journal of Sociology, September, 1921.
Also C. E. Ayres, "Instinct and Capacity," Journal of Philosophy, October 13 and 27, 1921.

sider the extent to which motives do fall into pairs of opposites. There are numerous such couples or polarizations which cut deeper into human nature than do the proposed instincts. Our reasons for wanting things come down in astonishingly large measure to the desire to be like other people, and the desire to be different; we wish to do things because we can, or because we cannot; we crave companionship, of the right kind, but the requirement of privacy, even solitude, is equally imperative; we like the familiar, also the novel, security but likewise adventure, and so on. Acquisitiveness, the instinct which should be most salable to the economist is perhaps but the opposite of our alleged gregariousness, one being essentially the desire to exclude others from certain interests and the other the desire to share them. All these, like selfishness and unselfishness, have some meaning, but are hardly suitable bases for a scientific classification. It is significant that McDougall, the father of the modern instinct theory, regarded the feeling element as the only stable part of the instinct, both stimulus and reaction being subject to indefinite shift and change. The unsuitability of such a view as a foundation for the superstructure built upon it in the way of scientific laws of *behavior* hardly calls for comment.[3]

3. The logical defect of the instinct theory is a misconception of the aims and methods of scientific procedure, which fallacy also pervades the attempt to make psychology scientific. The significance of instincts would lie in the application of the analytic method to the study of consciousness (here, on its conative or volitional side). Analysis in natural science means different things in different cases, the general basis of its employment being that a thing can be explained by showing what it is made of. In some cases we can predict the whole from the parts by simple addition, in others by vector addition, as of forces in mechanics. In other cases we can only predict empirically as in chemistry. The properties of the compound (except mass) bear no simple or general relation to those of the elements, but we do know by experiment that the same compound can always be obtained from the same elements by putting them together in the same way (and conversely). The case of colors is interesting. One spectral color is physically as primary as another, yet a few are primary *in the sense that* we can get the others by mixing them. *None of these assumptions hold* in the study of consciousness, and analysis must be given a very special meaning in this field if it is to have any meaning at all. In our opinion Professor Bode has put an eternal quietus on much of what passes for science in psychology. See his paper on "The Doctrine of Focus and Fringe," Philosophical Review, 1914.

From the instinct theory we turn naturally to the ancient doctrine of psychology and ethics to which it is a handmaiden, that the end of activity is a "harmonious adjustment" of the organism, a smooth and unobstructed functioning of the digestive, neuro-muscular and glandular systems (and perhaps the reproductive also, and any special structures concerned with tending the young or other social activities) and for consciousness the feeling of satisfaction or comfort that goes with this condition.[4] Freudianism and abnormal psychology have seemed to confirm this view, and Thorndyke [5] also tho rather guardedly speaks of behavior as controlled by "satisfiers" and "annoyers." Perhaps a sufficient comment on the hedonistic theory would be to run through again the main categories of economic wants, food, clothing, shelter, amusement, etc., and simply ask the candid question as to what fraction of the ordinary man's expenditure for any of them makes him "feel better" or is expected to do so. The higher one is in the economic scale, the more successful in doing what all are trying to do, the larger is the proportion of his consumption which tends to make him less, and not more, "comfortable."

The authors of great imaginative literature — always indefinitely better psychologists than the psychologists so-called — have never fallen into any such palpable delusion as the belief that men either strive for happiness or expect to be made happy by their striving. The same has been true of philosophers and religious thinkers of all time, and even economists have recognized the futility

4. The socialists have assumed hedonism rather than argued for it. Spencer regarded it as also axiomatic that life-sustaining activities are necessarily pleasure-giving (Data of Ethics, Sec. 34) and vice versa. Modern pragmatism seems to run in terms of the same twofold assumption that The Good is identical with both the biologically beneficial and the actually desired. It seems to us that critical thought confirms common sense in repudiating both parts of this dogma.

5. The Original Nature of Man. New York, 1913.

of attempting to satisfy wants. It is obvious that wants multiply in at least as great a ratio as the heads of the famous hydra. Greeks as well as Hindus, and Epicureans as well as Stoics and Cynics perceived at the dawn of modern culture that it is indefinitely more "satisfactory" and "economical" to repress desire than to attempt to satisfy it. Nor do men who know what they do want — and who have not sapped their vitality by unnatural living or too much of a certain kind of thinking — want their wants satisfied. This argument of economists and other pragmatists that men work and think to get themselves out of trouble is at least half an inversion of the facts. The things we work for are "annoyers" as often as "satisfiers"; we spend as much ingenuity in getting into trouble as in getting out, and in any case enough to keep in effectively. It is our nature to "travel afar to seek disquietude," and "'tis distance lends enchantment to the view." It cannot be maintained that civilization itself makes men "happier" than they are in savagery. The purpose of education is certainly not to make anyone happy; its aim is rather to raise problems rather than solve them; the association of sadness and wisdom is proverbial, and the most famous of wise men observed that "in much wisdom is much grief, and he that increaseth knowledge increaseth sorrow." Thus the pursuit of the "higher things" and the crasser indulgences are alike failures if the test is happiness.

But the test is not happiness. And by this we do not mean that it ought not to be but the simple fact that that is not what men want. It is a stock and conclusive objection to utopias that men simply will not live in a world where everything runs smoothly and life is free from care. We all recall William James' relief at getting away from Chatauqua. A man who has nothing to

worry about immediately busies himself in creating something, gets into some absorbing game, falls in love, prepares to conquer some enemy or hunt lions or the North Pole or what not. We recall also the case of Faust, that the Devil himself could not invent escapades and adventures fast enough to give his soul one moment's peace. So he died, seeking and striving, and the Angel pronounced him thereby "saved": — "Wer immer strebend sich bemüht, den können wir erlösen." The pleasure philosophy is a false theory of life; there abide pain, grief and boredom: these three; and the greatest of these is boredom. The Hindus thought this question of happiness through to the end long ago, and reached the inevitable conclusion — Nirvana — just life enough to enjoy being dead.[6]

6. There is an incident in the Life of Pyrrhus, as told by Plutarch, which shows the nature of man and his motives so much better than all the scientific psychology ever written that it merits repeating substantially as that author tells it.

"When Pyrrhus had thus retired into Epirus, and left Macedonia, he had a fair occasion given him by fortune to enjoy himself in quiet, and to govern his own kingdom in peace. But he was persuaded, that neither to annoy others, nor to be annoyed by them, was a life insufferably languishing and tedious. . . . His anxiety for fresh employment was relieved as follows. (Then follows a statement of his preparations for making war against Rome.)

"There was then at the court of Pyrrhus, a Thessalonian named Cineas, a man of sound sense, and . . . who had devoted himself to Pyrrhus in all the embassies he was employed in . . . and he continued to heap honors and employments upon him. Cienas, now seeing Pyrrhus intent upon his preparations for Italy, took an opportunity, when he saw him at leisure, to draw him into the following conversation: — 'The Romans have the reputation of being excellent soldiers, and have the command of many warlike nations: if it please heaven that we conquer them, what use, Sir, shall we make of our victory?' 'Cineas,' replied the king 'your question answers itself. When the Romans are once subdued, there is no town, whether Greek or barbarian, in all the country, that will dare oppose us; but we shall immediately be masters of all Italy, whose greatness, power and importance no man knows better than you.' Cineas, after a short pause, continued. 'But, after we have conquered Italy, what shall we do next, Sir?' Pyrrhus, not yet perceiving his drift, replied, 'There is Sicily very near, and stretches out her arms to receive us, a fruitful and populous island, and easy to be taken. . . .' 'What you say, my prince,' said Cineas, 'is very probable; but is the taking of Sicily to conclude our expeditions?' 'Far from it,' answered Pyrrhus,' 'for if heaven grant us success in this, that success shall only be the prelude to greater things. Who can forbear Libya and Carthage, then within reach? . . . And when we have made such conquests, who can pretend to say that any of our enemies, who are now so insolent, will think of resisting us?' To be sure,' said Cineas, 'they will not; . . . But when we have conquered all, what are we to do then?' 'Why, then, my friend,' said Pyrrhus, laughing, we will take our ease, and drink, and be merry.' Cineas, having

The idea of a distinction between economic wants and other wants must be abandoned. There is no definable objective, whether subsistence, gratification of fundamental impulses or pleasure, which will serve to separate any of our activities from the body of conduct as a whole. Nor, we aim especially to emphasize, is there any *definable* objective which properly characterizes any of it. It simply is not finally directed to the satisfaction of any desires or the achievement of any ends external or internal[7] which can be formulated in propositions and made the subject of logical discourse. All ends and motives are economic in that they require the use of objective resources in their realization; all are ideal, conventional or sentimental in that the attempt to define objective ends breaks down. Behind them all is "the restless spirit of man," who is an aspiring rather than a desiring being; and such a scientifically undescriptive and unsatisfactory characterization is the best we can give.[8]

For the purpose of defining economics the correct procedure would appear to be to start from the ordinary meaning of the verb to economize, that is, to use resources wisely in the achievment of *given* ends. In so far as the ends are viewed as given, as data, then all activity

brought him thus far replied, 'And what hinders us from drinking and taking our ease now, when we have already those things in our hands, at which we propose to arrive through seas of blood, through infinite toils and dangers, through innumerable calamities, which we must both cause and suffer?'

"This discourse of Cineas gave Pyrrhus pain, but produced no reformation. . . ."

7. The term happiness is as heterogeneous as any other; its only meaning is that the end of action is *some* state of consciousness. Besides being as vague as possible this statement, in the view of practically all thinkers on ethics who were not hoodwinked by economic logic and the price system itself, is false.

8. This reasoning refutes alike such classifications of wants as Professor Everett has given in his very charming book on Moral Values (chap. VII, esp. sec. II) and the distinction between industrial and pecuniary values already mentioned. All of Everett's kinds of value are economic; in fact nearly any specific value belongs to most of his classes.

In regard to "real ends," we should note the futile quest of a Summum Bonum by ethical thinkers.

is economic. The question of the effectiveness of the adaptation of means is the only question to be asked regarding conduct, and economics is the one and all-inclusive science of conduct.[9] From this point of view the problem of life becomes simply the economic problem, how to employ the existing and available supplies of all sorts of resources, human and material, natural and artificial, in producing the maximum *amount* of *want-satisfaction*, including the provision of new resources for increased value production in so far as the present population finds itself actually desiring future progress. The assumption that wants or ends are data reduces life to economics,[1] and raises again the question with which we started out, Is life all economics or does this view require supplementing by an ethical view of value?

The conception of economics outlined above is in harmony with the traditions of economic literature. The "economic man," the familiar subject of theoretical discussion, has been much mistreated by both friends

9. For purposes of academic division of labor this will have to be restricted by excluding the technological aspect of adaptation and restricting economics to the general theory of organisation. Most of the attention will practically be given to the theory of the *existing* organisation, through private property and competitive free exchange, which makes economics virtually the science of prices. Our definition of the economic aspect of behavior includes not only technology as ordinarily understood but the techniques of all the arts.

1. That is, on the practical or conduct side. A word may be in place as to the relation between economics as a science thus broadly conceived and related sciences. Conduct is not co-extensive with human behavior; much of the latter is admittedly capricious, irrational, practically automatic, in its nature. Different actions have in various degrees the character of conduct, which we define with Spencer as "the adaptation of acts to ends," or briefly, deliberative or rational activity. Much that is at the moment virtually reflex and unconscious is, however, the result of habit or of self-legislation in the past, and hence ultimately rational. But there is a place for the study of automatic responses, or behaviorism, and also for psychology, which should not be confused with the former.

We have by no means meant to repudiate the attempt of biology to explain the end or motives which the science of conduct uses as data. This is altogether commendable, as is also the effort to explain biology in physico-chemical terms. These researches should be pushed as far as possible; we object only to the uncritical assumption that they have explained something when they have not, and to dogmatic assertion (either way) as to how far it is intrinsically possible to carry such explanations.

and foes, but such a conception, explicit or implicit, underlies all economic speculation. The economic man is the individual who obeys economic laws, which is merely to say that he obeys *some* laws of conduct, it being the task of the science to find out what the laws are. He is the *rational* man, the man who knows what he wants and orders his conduct intelligently with a view to getting it. In no other sense can there be laws of conduct or a science of conduct; the only possible "science" of conduct is that which treats of the behavior of the economic man, i. e., economics in the very broad sense in which we have used the term. A scientific principle necessarily takes the form that under given conditions certain things can be counted upon to happen; in the field of conduct the given conditions are the desires or ends and the rationale or technique for achieving them.

The objections raised to the notion of the economic man, are however also sound in their own way. They reduce to the proposition that *there is no such man*, and this is literally true. Human beings do not in their conscious behavior act according to laws, and in the concrete sense a science of conduct is an impossibility. They neither know what they want — to say nothing of what is "good" for them — nor act very intelligently to secure the things which they have decided to try to get.[2] The limitation on intelligence — knowledge of technique — is not fatal to the conception of a scientific treatment of behavior, since people are "more or less" intelligent, and "tend" to act intelligently, and all science involves a large measure of abstraction. Far more essentially is the limitation due to the fact that the "given conditions," the causes at work, are not really given, that

2. From this point of view again the animals are superior to man, in that they are more intelligent, sensible; a hog knows what is good for him and does it!

wants are not ultimately data and the individual more or less completely recognizes that they are not.

The definition of economics must, therefore, be revised to state that it treats of conduct *in so far* as conduct is amenable to scientific treatment, in so far as it is controlled by definable conditions and can be reduced to law. But this, measured by the standard of natural science, is not very far. *There are no data* for a science of conduct in a sense analogous to natural science. The data of conduct are provisional, shifting, and special to individual, unique situations in so high a degree that generalization is relatively fruitless. *For the time being,* an individual acts (more or less) *as if* his conduct were directed to the realization of some end more or less ascertainable, but at best provisional and vague. The person himself is usually aware that it is not really final, not really an "end"; it is only the end of the particular act, and not the ultimate end of that. A man engaged in a game of chess acts *as if* the supreme value in life were to capture his opponent's pieces; but this is obviously not a true or final end; the circumstances which have led the individual to accept it as end for the moment come largely under the head of accident and cannot be reduced to law — and the typical conduct situation in civilized life is analogous to the game in all the essential respects.

A science of conduct is, therefore, possible only if its subject-matter is made abstract to the point of telling us little or nothing about actual behavior. Economics deals with the form of conduct rather than its substance or content. We can say that a man will in general prefer a larger quantity of wealth to a smaller (the principal trait of the economic man) because in the statement the term "wealth" has no definite concrete meaning; it is merely an abstract term covering everything which men

do actually (provisionally) want. The only other important economic law of conduct, the law of diminishing utility, is almost as abstract; its objective content is covered by the statement that men strive to distribute income in some way most satisfactory to the person at the time among an indefinite number of wants and means of satisfaction rather than to concentrate upon one or a few. Such laws are unimportant because they deal with form only and say virtually nothing about content, but it is imperative to understand what they do and what they do not mean.

If one wishes to study the concrete content of motives and conduct he must turn from economic theory to biology, social psychology and especially culture history. Culture history is not, therefore, a method of economics, as the historic quarrel would lead one to think, but a different field of inquiry. It gives a *genetic*, and not a *scientific* account of its subject-matter. History has, indeed, tried to become a science and the effort has brought forth numerous "philosophies of history," but it is open to grave doubt whether "laws" of history exist and whether the entire project is not based on a misconception.[3]

If a science of economics is limited to the abstract form of conduct and the treatment of conduct in the concrete takes the form of history rather than science, what is to be said of ethics? In addition to the explanation of conduct in terms of motives and the explanation of the motives, common sense does raise another kind of question, that of the *evaluation* of motives. But we are met at the outset with the logically insuperable difficulty

3. It is impossible to discuss at length the relations between historic (genetic) and scientific explanation. The distinction is perhaps sufficiently well established to justify using the terms without a lengthy philosophic analysis. Our point of view is not that either of these is "higher" than the other; we merely insist that they are different and that each can fulfill its special purpose best by recognizing the difference.

that the criticism of an end implies some *standard*, which can logically only be another end, which to enter into logical discourse must be viewed as a datum, like the first. Hence, scientifically, we can never get beyond the question of whether one end conflicts with another and if so which is to be sacrificed. But this mere comparison of ends as given magnitudes belongs to the economic calculation involved in creating the maximum amount of value or want-satisfaction out of a given fund of resources; hence there seems to be no place for anything but economics in the field of value, and scientifically there is none. If we are to establish a place for ethics really distinct from economics and independent of it, it must be done by finding ends or standards which are something more than scientific data.[4]

For those to whom ethics is only a more or less "glorified" economics, virtue is correspondingly reduced to an enlarged prudence. But the essential element in the moral common sense of mankind seems to be the conviction that there is a difference between virtue and prudence, between what one "really wants" to do and what one "ought" to do; even if some religious or other "sanction" makes it ultimately prudent to do right, at least it remains true that it is prudent because right and not right because prudent or because there is no difference between the two. A considerable part of the literature of ethics consists of debate over the validity of this distinction and of moral common sense, which is to say over whether there is any such thing as ethics or not, and the question creates perhaps the most fundamental

4. It was remarked early in the present discussion that one leading school of ethicists (the hedonistic) merely enlarge the principles of economics and do not believe in any other ethics. Economists have usually held to this view — the principle is the same whether their good is called pleasure or want-satisfaction, so long as it is held to be quantitative — and now the same position is being taken up by the realistic school of philosophers who regard value as a real quality in things. Cf. R. B. Perry, The Moral Economy.

division between schools of thought. There was no difficulty for the Greeks, who had no word for duty or conscience in their language, and there is none for the modern "pagan" who considers these things as outworn puritan superstitions. It must appear dogmatic to seem to take sides on the question without working out an entire philosophic system in justification of the position, but we wish to point out that *if* there is to be a real ethics it cannot be a science, and to cite a few reasons for believing in the possibility of a real ethics.

The first of these considerations is the argument developed in this paper that the view of ends as scientific data breaks down under examination. The second is that the rational, economic, criticism of values gives results repugnant to all common sense. In this view the ideal man would be the economic man, the man who knows what he wants and "goes after it" with singleness of purpose. The fact is, of course, the reverse. The economic man is the selfish, ruthless object of moral condemnation. Moreover we do not bestow praise and affection on the basis of conduct alone or mainly, but quite irrationally on the motives themselves, the feelings to which we impute the conduct.

We cannot dwell on the moral habitability of the world under different hypotheses or argue the question whether such implications constitute "evidence" for the hypothesis in question. The disillusioned advocate of hard-headedness and clear thinking would usually admit that the "moral illusion" has stood the pragmatic test and concede its utility while contending that it is scientifically a hoax. But it is pertinent to observe that the brick-and-mortar world cannot be constructed for thought out of purely objective data. There is always a feeling element in any belief. Force and energy are notoriously feelings of ours which we read into

things, yet we cannot think of anything as real without force as a real. Apparently we are incapable of picturing anything as existing without putting a spark of our own consciousness into it. Behind every fact is a theory and behind that an interest. There is no purely objective reason for believing anything any more than there is for doing anything, and if our feelings tell us nothing about reality then we know and can know nothing about it. From this it is an easy step to see that the intolerable repugnance of the idea that not only duty and right, but all effort, aspiration and sacrifice are delusions is after all as good a reason for believing that they are not as we have for believing that the solid earth exists in any other sense then seeming to us to do so.

But the main argument for the validity and necessity of a real, non-scientific, transcendental ethics comes out of the limitations of scientific explanation. We have seen that the "scientific" treatment of conduct is restricted to its abstract form, that its concrete content can only be explained "historically." But in dealing with human problems we are constantly thrown back upon categories still more remote from the scientific, upon relations which cannot be formulated in logical propositions at all, and we must admit that a large part of our "knowledge" is of this character. That figurative language does convey a meaning, however, is indisputable, and it is commonly a meaning which could not be expressed literally. When Burns says that his Love is "like a red, red rose," etc., when Kipling tells us of Fuzzy-Wuzzy that "'E's a daisy, 'e's a ducky, 'e's a lamb," their words meaning something, tho it is not what they say! William James has commented on the effectiveness of these comparisons whose physical basis is undiscoverable, illustrating by the statement that a

certain author's style is like the atmosphere of a room in which pastilles have been burning. Let anyone take even a science text-book and try to translate all the figurative expressions into literal, purely logical form, and he will realize how impossible it is to describe the world in terms which mean definitely what they say.

Of this general description must be the criticism of values, as it is the character of æsthetic and literary criticism. Our values, our standards, are only more obviously of the same character which our desires reveal on examination — not describable because not stable, growing and changing by necessity of their inner nature. This is, of course, intellectually unsatisfactory. The scientific mind can rest only in one of two extreme positions, that there are absolute values, or that every individual desire is an absolute and one as "good" as another. But neither of these is true; we must learn to think in terms of "value-standards" which have validity of a more subtle kind. It is the higher goal of conduct to test and try these values, to define and improve them, rather than to accept and "satisfy" them. There are no rules for judging values, and it is the worst of errors to attempt to make rules — beyond the rule to "use good judgment"; but it is also most false to assert that one opinion is as good as another, that *de gustibus non disputandum est.* Professor Tufts has put the question in a neatly epigrammatic way which emphasizes its unsatisfactoriness from a rational, scientific standpoint: "The only test for goodness is that good persons on reflection approve and choose it—just as the test for good persons is that they choose and do the good." [5]

5. See essay on "The Moral Life," in the volume entitled Creative Intelligence, by Dewey and others. Professor R. B. Perry in a review as beautifully illustrates the inevitable scientific-economic reaction to this viewpoint. See Quarterly Journal of Ethics, vol. 28, p. 119, where Professor Perry, referring to the statement quoted above, says: ". . . it cannot appear to its author as it appears to me. I can only record my blank amazement."

If the suggestions above thrown out are sound, there is room in the field of conduct for three different kinds of treatment: first, a scientific view, or economics and technology; second, a genetic view, or culture history, and third, for a Criticism of Values. The discussion of the latter will, like literary and artistic criticism, run in terms of suggestion rather than logical statement, in figurative rather than literal language, and its principles will be available through sympathetic interpretation rather than intellectual cognition.[6]

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6. There is obviously a need for a better terminology, if history and criticism are to have their methods properly named and if they are to be adequately distinguished from the "sciences." Such adjectives as genetic and normative, used with the word science are objectionable, but perhaps the best we can do. They do not sufficiently emphasize the contrasts.

It should be noted that some writers have attempted to make ethics scientific on the basis of somewhat different logical procedure from that sketched above. They regard the end of conduct as the production of some "state of consciousness" (pleasure or happiness) but assume that the common sense being does not know the effects of acts and hence that special study of past experience (on the basis of the *post facto* satisfactoriness of results) is necessary to secure rules for guidance. This reasoning does not separate ethics from economics, however, as it is again a mere question of technique for securing recognized ends.

GERMAN FOREIGN TRADE AND THE REPARATION PAYMENTS

SUMMARY

I. Germany's economic paradox, 482. — The pre-war trade balance, 483. — Why the London Settlement on reparations broke down, 483. — The two periods of falling exchange since the Armistice, and the different behavior of the foreign trade, 485. — II. The reasons for the paradox: composition of the exports and the imports, 487. — Effect upon imports of the abolition of food price control, 489. — Relation of United States exports to German imports last year, 489. — The system of export control, 490. — Effects of depreciating exchange on home buying, 492. — The export trade has responded more sympathetically to a moderate rise of the mark, 493. — A growth of exports sufficient to pay reparations depends largely upon recovery of the Russian market, 493. — How the imports have been paid for and the reparation charges met, 495. — III. Germany's experiences furnish light on the theory of foreign exchange under paper, 498. — Export and domestic prices compared, 499. — The causal sequence appears to have run as follows: reparation payments, depreciating exchange, rising export and import prices, rising internal prices, budgetary deficits and increased private demand for credit, increased note issue, 501.

I

GERMAN foreign trade in 1921 displayed a striking economic paradox. It is now a commonplace that Germany's ability to pay reparations [1] depends on the capacity of the export trade to expand over imports. The short-lived attempt to meet the payments required by the London agreement of May 5, 1921 was un-

1. Since our concern in this paper is not with the reparation problem as a whole, but only with its foreign trade aspect, it is unnecessary to consider the distinction between ability to pay and ability to transfer the payment. The latter is a question of foreign trade; the former is primarily a question of national resources and income, when viewed from the standpoint of the German people, and primarily a question of the budget, when viewed from the standpoint of their government. That these and the foreign trade are but different aspects of the same problem, and closely interrelated, is of course obvious. The foreign trade as here discussed, omits reparations in kind, which have no direct connection with the exchange and price conditions we are concerned with.

doubtedly the chief cause [2] of the precipitous decline of the mark between May and November. According to theory, the depreciating foreign exchange value of the mark should have stimulated exports and depressed imports. Much of the agitation in this country for higher duties and the American valuation plan has been aimed particularly against the expected flood of cheap goods from Germany; and similar legislation has been passed or is contemplated in Sweden, Denmark, Norway, Great Britain, Switzerland, Finland, Argentina, and Japan. The German trade statistics, however, show that instead of the expected increase of exports, the fall of the mark last year was accompanied by an increasing excess of imports over exports.

To appreciate what occurred last year one must recall Germany's pre-war trade balance. In 1913 exports amounted to about 10,000,000,000 gold marks and imports to about 11,125,000,000 gold marks; and for the five years ending with 1913 the average excess of imports was $370,000,000 a year, the difference representing the surplus of income from foreign investments over new investment, shipping earnings, tourists' expenditures, and the like. Since the war removed most of these credits, and the shipping balance, despite signs of remarkable recovery since the Armistice, must now stand as a debit, it is evident that with a foreign trade of pre-war magnitude Germany would now need, quite apart from the reparation payments, to expand exports or reduce imports by several hundred million dollars a year. The reorganization of national production and consumption implied would raise for Germany, even were reparations canceled, as difficult a problem in foreign trade as that now facing any other nation.

To this is added the reparation charge. To pay the sum named in the Versailles Treaty, 138,000,000,000

2. See below, pp. 501–3.

gold marks,[3] would require at 5 per cent interest and 1 per cent sinking fund annual payments of 8,280,000,000 gold marks. As Keynes has pointed out,[4] to pay this bill under the plan provided by the London Settlement of last May, which called for 2,000,000,000 gold marks a year plus 26 per cent of the exports, German exports would have had to rise to 24,000,000,000 gold marks a year, or about two and a half times the pre-war export trade, and this without any increase of imports beyond their pre-war level. In the last eight months of 1921 [5] German exports actually amounted to 2,432,000,000 gold marks, or at the rate of 3,650,000,000 gold marks a year, about one-third of the pre-war figure. With exports of this magnitude, the actual reparation bill from May through December, 1921, amounted under the London Settlement plan to 1,965,000,000 gold marks.[6] In other words, in order to meet even the relatively moderate terms of the London Settlement, Germany's exports in those eight months would have needed to exceed her imports by almost 2,000,000,000 gold marks. But, in fact, the imports exceeded the exports by 557,000,000 gold marks. For months, therefore, before the German government announced in December [7] that it could not meet the January and February payments of this year, the complete breakdown of the plan announced to the world last May as a final solution of the reparations problem was seen to be inevitable.

3. Including the Belgian war debt. 4. "A Revision of the Treaty," p. 71.

5. Trade statistics for the first four months have not been published.

6. According to the schedule of payments in force, the actual payments made during this period were 1,051,000,000 gold marks. Including deliveries in kind, transfers of property, etc. (5,246,000 gold marks), the total payments in 1921 were 6,424,000,000 gold marks. Federal Reserve Bulletin, March, 1922, p. 301.

7. Since that time ten-day payments of 31,000,000 gold marks have been made. These represent, apparently, merely the sums due under the 26 per cent levy on exports, no attempt being made to collect any portion of the 2,000,000,000 gold marks annual cash payment required under the London Settlement. Under a new arrangement, announced tentatively by the Reparations Commission at the end of February, the payments to be required this year are to consist of 720,000,000 gold marks in cash and 1,450,000,000 gold marks in kind.

The contradictory behavior of German foreign trade last year [8] is seen most strikingly by a comparison of the two boom periods which Germany has experienced since the Armistice as a result of the depreciating mark exchange. The first occurred in the fall and winter of 1919–20, and the second in the period May–November, 1921. In the earlier period the mark fell from 7.13 cents in July, 1919 to 1.08 cents in February, 1920. As will be seen from the table, the result was a pronounced increase in both imports and exports, in terms of paper marks. But on a gold basis imports declined from 1,061,000,000 gold marks in July, 1919 to 269,000,000 gold marks in February, 1920, while exports considerably increased. This is best shown by the monthly trade balance. From an excess of imports of 890,000,000 gold marks in July, 1919 the unfavorable balance was reduced to 76,000,000 gold marks in February, 1920. In the first period of depreciating mark exchange, therefore, the behavior of the foreign trade bore out theoretical expectation. Exports were stimulated and imports discouraged.

8. Complete trade statistics for the period since the Armistice have not yet been published. For 1919 and the first five months of 1920 trade data, in paper marks, were presented by the German delegates to the Brussels Financial Conference. For 1920 complete statistics by weight are available, but only for exports are the values given.* For January–April, 1921 no figures at all have appeared, but since that time we have had complete statistics by value and by quantity for both imports and exports. Incomplete as the data are, they are yet sufficient to give the main outlines of the situation. In quantity, imports have fallen from a monthly average of 6,058,000 metric tons in 1913 to 1,570,000 in 1920 and 2,157,000 in 1921. Germany's imports in 1920 were thus about one-fourth of the quantity imported in 1913, and in 1921 were about one-third the pre-war figure. In exports the monthly average was 6,146,000 tons in 1913, 1,650,000 tons in 1920, and 1,610,000 tons in 1921. The exports have thus been about one-fourth of the pre-war figure, so far as quantities are concerned. It will be seen, too, that while imports increased about one-fourth in quantity last year over 1920, the quantity exported actually declined. The value figures are even more striking. From monthly average imports of 927,000,000 gold marks in 1913 imports fell to 571,000,000 gold marks a month in 1919–20 and 375,000,000 gold marks in 1921. Exports meanwhile declined from 841,000,000 gold marks per month in 1913 to 256,000,000 gold marks a month in 1919–20 and 304,000,000 gold marks in 1921. In other words, German exports and imports last year were little more than one-third of the pre-war figures.

* Since this note was written value statistics for imports in 1920 have been published.

GERMAN FOREIGN TRADE

	1,000,000 paper marks			1,000,000 gold marks [9]		
	Imports	Exports	Balance	Imports	Exports	Balance
1913 Monthly average	....	....	....	927	871	−56
JULY, 1919 TO MAY, 1920						
1919						
July	3538	570	−2968	1061	171	−890
August	3817	735	−3082	824	158	−666
September	4191	790	−3401	702	132	−570
October	5179	1089	−4090	832	175	−657
November	4446	1284	−3162	500	144	−356
December	5178	4014	−1164	489	392	− 97
1920						
January	6560	3219	−3341	459	224	−235
February	5932	4262	−1670	269	193	− 76
March	5683	4216	−1467	310	230	− 80
April	4768	5344	+ 576	328	379	+ 51
May	5537	6647	+1110	514	616	+102
Totals	54829	32170	−22659	6288	2814	−3474
Monthly average	4984	2924	−2059	571	256	−315
MAY TO DECEMBER, 1921						
1921						
May	5486	4558	− 928	373	310	− 63
June	6409	5432	− 977	392	331	− 61
July	7580	6208	−1372	407	334	− 73
August	9418	6683	−2735	463	328	−135
September	10668	7519	−3149	440	309	−131
October	13900	9700	−4200	396	276	−120
November	11912	12278	+ 366	219	226	+ 7
December	13707	14554	+ 847	299	318	+ 19
Totals	79080	66932	−12148	2989	2432	−557
Monthly average	9885	8366	−1518	373	304	− 69

9. Gold marks obtained by multiplying paper mark figure for each month by percentage of parity for that month of German mark in terms of American dollar.

In marked contrast has been Germany's experience with foreign trade during the second period of pronounced exchange depreciation, May–November, 1921. The mark fell from 1.77 cents on May 21 to .37¼ cents on November 26. As shown by the table, imports expanded enormously from May to October, the imports in October reaching the huge figure of 13,900,000,000 paper marks, or two and a half times the imports for May. Exports expanded more moderately, from 4,588,000,000 paper marks in May to 9,700,000,000 paper marks in October. When reduced to a gold basis, the exports show an actual decline, from 310,000,000 gold marks in May to 276,000,000 gold marks in October. The monthly trade balance, which in May showed an excess of imports amounting to 928,000,000 paper marks, mounted rapidly in each successive month, until in October the excess of imports amounted to 4,200,000,000 paper marks; in gold marks the change was from an excess of imports of 63,000,000 marks in May to an excess of 120,000,000 marks in October. In other words, exports were discouraged instead of stimulated by the depreciating exchange, and imports, instead of declining, were markedly increased.

II

This paradox is the outcome of a number of factors. Germany's exports are mainly manufactured products. In 1913, 61 per cent of the whole were fully manufactured goods;[1] and as has been pointed out by Stinnes,

1. Of the classes of exports constituting 5 per cent or more of total exports, only coal (7.5 per cent) was not a manufactured product. Cereal exports were only 4 per cent, and sugar less than 3 per cent. Total raw materials were but 16 per cent. Of those exceeding 5 per cent, cotton goods (5.6 per cent) and woolen goods (5.9 per cent) were mainly dependent on imported raw material. Only iron goods (13.3 per cent) and machinery (7.5 per cent) could find the greater part of their materials at home; and with the loss of Alsace-Lorraine and Silesian supplies, Germany would now need, in order to maintain its industry on the same basis as in 1913, to import about 35,000,000 tons of ore yearly compared with 14,000,000 tons before the war.

Rathenau and others the effect of the reparation payments must be to divert export as much as possible to the more valuable finished products. In 1921, 80 per cent of the exports were fully manufactured goods. Under these circumstances, no stimulus afforded by depreciating exchange rates, however powerful, could bring about a substantial increase of German exports for more than a brief period until the raw materials for their manufacture had been provided. It is not surprising, therefore, that in 1919 (the earlier boom period referred to), when trade was fairly free from government restriction, entire factories were dismantled and the machinery sold abroad because the factory could not be operated for lack of raw materials, whereas the machinery brought attractive prices in marks.[2]

The reverse aspect of the same condition is that imports have been dominated by the need of raw materials for manufacture and of food products to sustain the industrial population, which has been so great as to offset the depressive effect of the depreciating mark. With reserve stocks exhausted and fixed plant and equipment deteriorated by the war, imports of this character are the necessary first step toward a return to a normal economic life; this would be the case, indeed, quite apart from the requirements of the export trade and the effects of the reparations program. Also, the loss of farming territory to Poland adds a permanent new element of food imports, to be offset eventually by new manufactured exports; and losses of iron territory to France would make necessary, to maintain the iron and steel industry on the pre-war basis, iron-ore imports of nearly treble the pre-war figure. In 1921 raw

2. J. Anton de Haas, "The Present Outlook for United States Trade with Germany," Annals of the American Academy, March, 1921, p. 82.

materials and food products were 88 per cent of total imports.

German imports last year were undoubtedly increased also by the abolition of state regulation of food prices. The law of July 21, 1921 restored the free sale and free pricing of breadstuffs, and at the same time abolished the system of centralizing in semi-official hands the import of breadstuffs and fodder,[3] so that dealers were permitted to import at their own risk. A computation by the Harvard Committee on Economic Research [4] has recently thrown much light upon the expansion of our own agricultural exports last year, in marked contrast with the general decline in other branches of our export trade. In food importing countries, food prices rose relatively to general prices in 1921, owing chiefly to the removal of government price control, and in food exporting countries food prices fell relatively to general prices in accordance with the familiar fact that in a period of liquidation the prices of agricultural products usually fall first and furthest.

The relation of our exports to German imports last year was indeed very striking. In 1913, when United States exports to Germany were 16 per cent of the entire German imports, a larger proportion than was supplied by any other country,[5] they amounted to $351,930,000, against imports of $184,211,000. It 1920 the exports were $311,437,000, against imports of $88,836,000; and in 1921, $372,325,000 (one-fourth of total German imports), against imports of $80,279,000. Last year Germany took 40 per cent of our copper exports, more than

3. This had been a part of the *Zwangwirtschaft*, whereby industry was placed under the control of the government or of semi-public control associations.

4. Harvard Economic Service, Weekly Letter, February 18, 1922.

5. In 1913 German imports from Russia were 13 per cent of the whole, from Great Britain, 8 per cent, and from Austria-Hungary, 8 per cent; no other country supplied more than 5 per cent.

any other country, one-fourth of our raw cotton, of which she was the second largest importer, and one-eighth of our wheat exports, being exceeded only by Great Britain and Italy. Our exports to Germany of these three products alone amounted to $213,234,000.[6] But the most significant change compared with the pre-war exports was in food products. Our total food products sold to Germany last year amounted to $140,000,000, against $50,000,000 in 1913, while exports of cotton were $47,000,000 and $168,000,000 respectively, and of copper, $31,000,000 and $47,000,000. German buying of raw factory material is thus still far under normal, while purchases of food products in this country, including finished manufactures thereof, have been unprecedented. Despite imports of cheap German cutlery, toys, and the like, which have excited so much discussion here, it is evident that up to the present, with exports to Germany the largest in our history and imports therefrom less than one-half of pre-war figures, and with an excess of exports to Germany of $424,647,000 in 1920 and 1921, we have had an effective answer to the fears of those who seek protection from cheap German goods by a policy of higher tariff duties.

The chief reason for the difference in the behavior of German export trade in the two periods of falling exchange which have been outlined was the trade policy pursued by the German government. The heavy outgo

6. United States Exports to Germany in 1921 and 1913.

Units of $1,000,000	1921	1913
Total	372	352
Food	140	50
Wheat	62	12
Corn	10	4
Flour	12	0.8
Lard	35	20
Copper	31	47
Illuminating oil	1.2	4.5
Lubricating oil	11.6	3.7
Raw cotton	47	168

of goods in the earlier period forced the passage of the export license law of December 20, 1919. To this was added on May 10, 1920, a comprehensive system of export duties ranging from 2 to 10 per cent. The function of the thirty or more foreign trade control boards (*Aussenhandelstellen*) set up under the earlier act has been to prevent the denudation of the home market and to adjust German export prices to world market prices so as to prevent underselling. Minimum export prices were set up, and no licenses were to be issued unless the prices at which the goods were sold corresponded closely to the market price in the country of destination. Because of the difficulty of obtaining reliable and timely information the price adjustment could at best be but approximate. There is evidence too that when the exchange has favored foreign selling the minimum price requirements have been evaded, a favorite method being the use of double invoices, one to secure the requisite license and the other to serve as a record for rebating the customer later on. As will appear presently, however, in periods of active home buying enforcement has been less difficult. Tho only partly successful, the fact that the attempt is being made to prevent underselling abroad is significant. Besides protecting the home market from denudation it apparently indicates a desire not to excite the hostility of foreign governments which would lead to discriminatory action against German goods, against which, under the terms of the Treaty, Germany could not retaliate. With the improvement of the mark in exchange during the spring and summer of 1920 and the approximation of home prices to world prices, widespread complaint against the export duties led to their gradual relaxation and to the moderation of export control generally. In April, 1921, part of the iron and steel industry was voluntarily decontrolled by the

state-created Iron Industry Union, and by the end of May the relaxation of control had extended to many of the important lines of export.[7]

This was the situation when the mark began its downward course last May. From May to August the decline was moderate (from 1.5 cents to 1.2 cents) and from then to mid-November headlong, reaching .37 cents, a drop from August of 70 per cent. Export control and export duties were reimposed, and their effectiveness was greatly enhanced by the influence of the depreciating mark upon the home market. As the mark depreciated exports diminished because a heavy wave of home buying was stimulated through the fear that the rising prices would rise still higher. In the autumn months Germans were literally frightened into heavy domestic buying by the prospect of never-ceasing price increases. Complaints against exporting were frequent. Upon the consumers' attacking the Electrical Foreign Trade Board for allowing excessive export, the Board published figures to show that there was no excessive export. The home consumer had bought everything up.[8] And the same was true in most other important branches.

7. Including most textiles, leather goods, wire, small machines, tools, copper, railway cars, etc. Toys and clocks were exempted from license when the act was passed on December 20, 1919.

Besides indicating the effect of the improvement in mark exchange, the relaxation of export restrictions in the spring of 1921 was undoubtedly due in part to a desire to divert exports to neutral countries, not with a view to reparations, but as a retaliatory move against the Allied measures to force the payments required under the Versailles Treaty by May 1, 1921. The German government was particularly hostile to the Allied plan for expropriation of up to 50 per cent of monies due to German exporters for goods sold to Entente countries, and to the "sanctions" policy of the Inter-Allied Rhineland Commission, whereby the control of trade between occupied and unoccupied Germany and the collection of customs were reserved to the Commission. For a detailed account of the system of export control established by the act of December, 1919, see W. Pahl, Die Aussenhandelskontrolle, Berlin, 1920. For detailed comment on its operation and on the export duties good sources in English are the London Economist, Economic Review, Board of Trade Journal, New York Journal of Commerce.

8. New York Journal of Commerce, Berlin correspondence, December 21, 1921, March 21, 1922.

Owing, therefore, to the need of food and raw materials, the extraordinary effect of mark depreciation on home buying, and the entirely justifiable trade policy which Germany has pursued in consequence of the continually threatening possibility of denudation of a home market stripped bare by a long and severe war, the export trade has not responded to the stimulus of the depreciating exchange value of the mark. On the contrary it seems not improbable that German export trade would respond more sympathetically to a moderate rise in the value of the mark, contradictory as that sounds. By reference to the accompanying table again, it will be seen that the only months since the Armistice in which the German foreign trade has shown an excess of exports have been April and May, 1920, and November and December, 1921, the latter movement continuing into the present year.[9] In both of these periods the mark was rising after a period of violent descent. In May, 1920, the mark reached 2.34 cents, compared with 1.08 cents the preceding February. In December, 1921, the mark rose to .61¼ cents from the low point of .37¼ cents in November and experienced no further pronounced change until March. The domestic buying fever came to an end early in December when the mark began to improve strongly, and considerable stocks of goods manufactured during the boom period had then no other market than the foreign one. After the steadily increasing excess of exports from November through February it would be interesting to know what the trade figures will show for March, when the mark again fell to a new low level.

Despite the improvement in recent months, however, it is not likely that there will be an expansion of exports

9. In January, 1922, exports exceeded imports by about 36,000,000 gold marks and in February by about 48,000,000 gold marks.

sufficient to make possible substantial reparation payments until Germany's pre-war markets in eastern Europe have again been opened up.[1] Before the war Russia, Austria, and the Balkans took about one-fourth of the German exports; the European neutrals, Holland, Switzerland, Spain, and Scandinavia took about one-fifth; and France, Italy, Great Britain, and Belgium about three-tenths. The United States and all other non-European countries combined received about one-fourth of total German exports. In 1920, only 15 per cent of German exports went to England, France, Belgium, and Italy (exclusive of reparation payments in kind); Holland, Switzerland, Spain, and Scandinavia took 49 per cent; but Germany's attempt to reopen trade with Russia, Austria, and the Balkans was a distinct failure. More recently, however, we have had encouraging reports concerning Russo-German trade possibilities. It was recently reported by our commercial attaché that arrangements had been made by a group of German manufacturers and bankers to furnish to the Russian Soviet government a credit of 100,000,000 marks to finance German exports to Russia. This figure, however, is merely nominal, since the German bankers state that the initial credit will not exceed 5,000,000 marks. The granting of credit to Russia seems to represent the expectation of a return to a more normal condition in that country, and the recognition that the Russian market is vital to Germany's economic future. Russia has raw materials essential to German industry, and Germany has machinery and other products needed in Russia. The Pravda of Moscow recently announced, concerning the proposed order for locomotives and ma-

1. Professor Taussig's prediction that German trade recovery, on a scale sufficient to pay reparations, would depend on the Russian market is even more convincing now than when made in 1919; see "Germany's Reparation Payments," American Economic Review, Proceedings, March, 1920.

chine tools, worth 4,000,000,000 paper marks, that Russia would pay the German shippers one-seventh in gold, would receive a credit for three-sevenths until July, 1924, and would pay the remainder in mining and forestry concessions in the provinces of Bietka and Vologda.[2] As early as last November the Russian commissary Zinovieff stated that certain German firms were ready to supply goods to Russia on payment of only one-tenth in cash, the reason assigned being that they were bound to regain the Russian market at any cost. Reports of this character are extremely suggestive. If the economic conference at Genoa could accomplish nothing more than the reopening of Russia and eastern Europe to trade with Germany and other countries, that accomplishment alone would justify the calling of the conference.

Until the Russian trade develops, however, there seems little likelihood of a German export balance sufficient to pay reparations of substantial amount. How, then, have cash payments been made at all, and how, in addition, has Germany paid for her large excess of imports since the Armistice? Partly she has paid by selling marks to foreign investors and speculators. In other words, she has paid for some of her food and raw materials with issues of paper marks a year or more ago which are now worth nowhere near what they were then, and these creditors draw no interest and cannot demand payment in gold or in kind. Partly she has paid by balances created in other countries through transfer of

2. New York Times, January 16, February 3, 6, 15, 26, 1922. The Soviet's report for 1921 shows that one-third of the imports via Petrograd were German. Of 1,551,000 Russian poods of metal wares delivered in all Russia during November, 1,354,000 came from Germany. The Soviet commercial agency at Berlin reports that in 1921, Russia gave Germany 1250 orders for goods, aggregating 800,000,000 marks, of which 140,000,000 marks represented chemicals. Two foreign trade companies have been organised in Russia this year, the Soviet Commissariat for foreign trade owning 51 per cent of the stock and private individuals in Russia and elsewhere, chiefly in Germany, owning the other 49 per cent. The Daily Metal Trade, March 1, 1922.

German capital. According to the *Tagliche Rundschau*, between forty and fifty billion marks have gone to Switzerland alone.[3] At recent rates of exchange this would be something under a billion gold marks. The amount that has flowed into Holland has been estimated as high as $200,000,000.[4] The law against "capital flight," which would have expired on March 31, 1922, has been prolonged until March 31, 1923, tho the amount that may be taken abroad by travelers is raised from 3000 marks to 20,000 marks. Negotiations are under way with several states for mutual help against tax evaders, and an agreement has been concluded with Czecho-Slovakia, but apparently most of the neutral states have been reluctant to abandon their tradition of secrecy for banking accounts.[5] In part, too, the imports and the reparation charges have been paid for by transfers to foreigners of German business concerns, factories, and real estate. Foreign investments in Germany since the Armistice have been estimated as high as fifty billion marks, or something under $250,000,000 at recent exchange rates. With the external value of the mark depreciating more rapidly than the internal value, investments in Germany by outsiders have been obviously profitable. Foreign holders of German bank notes, also, are reported to have employed them for a similar purpose.[6] It should be borne

3. New York Journal of Commerce, February 1, 1922.

4. New York Times, December 24, 1921.

5. London Economist, March 4, 1922.

6. See Daily News Record, March 9, 1922, Economic Review, January 6, 1922. The Svensk Handelstidning, which sent a special representative to study Germany conditions last December, gives the following estimate of the German balance of payments:

"Germany's accumulated adverse trade balance for the war years amounts to (gold) mk. 10 milliards. In 1919 her trade deficit was (paper) mk. 30.3 milliards, and in 1920, about 52 milliards. Adding 12½ milliards for export of foreign money and securities, and about 30 milliards for freightage on foreign shipping, the total of these deficits may be put at 130–140 milliards. How are they balanced? Some 30 milliards in German notes are held abroad, including 9 milliards by the French and Belgian governments (from

in mind, however, that the same difference between the external and the internal value of the mark which makes profitable the inward movement of capital would make unprofitable the transfer in the other direction, except to the lower exchange countries of eastern Europe, and except, too, when the tax to be escaped exceeds the loss on the exchange; so that one wonders by what means capital has been smuggled out of Germany on so vast a scale as reported. That the smuggling has occurred, the multiplicity of reports, and the government measures taken, leave little room for doubting.[7]

Germany appears also to have obtained her imports in part by barter, or methods approaching barter. A good example is the exchange of raw materials for their equivalent in finished products through the Swiss Barter Institute, and by private organizations like the Central European Trading Company of London, which deals with the firm of Schubach, Thiemer & Co. of Hamburg.[8] More important is the growth of the *Veredlungsverkehr*,

occupied districts); 30 milliards represent foreign bank credits, and 15–20 milliards other credits. The remaining 50 milliards must have been invested in the purchase of German real wealth, property, shares, industries. These purchases were extremely profitable, as the price of city property has only tripled, and that of country property sextupled since normal times. It is, then, indisputable that the loss in the mark's value has been met by the pauperisation of the German people." Economic Review, January 6, 1922.

7. A very interesting explanation of one method of doing it is given in the Berlin correspondence of the Daily News Record, February 7, 1922:

"For several months, more than a few German firms have been conducting their overseas trade through dummy corporations in Rotterdam or Zurich. These companies, with nominal capitalization, placed orders for raw materials and figured as the direct selling agents of the goods fabricated in Germany. The most popular tax dodging scheme was for the small foreign corporation, with a credit in the country of its origin, to get the raw material and to ship it to the German mill under a supposed contract refining agreement. The mill here manufactured the goods and received the labor cost, plus a minimum of legal profit, in compensation, and the real but hidden profits derived from the sale of the merchandise reposed safely in the account of the ostensible selling corporations across the frontier. These are the profits the German government is now attempting to locate for taxation purposes."

8. J. Anton de Haas, "The Present Outlook for United States Trade with Germany," the Annals of the American Academy, March, 1921, p. 86.

a system of international coöperation especially encouraged by the German government, whereby the German manufacturer is given raw material on the understanding that he will deliver the finished product to the foreign merchant, the latter to retain ownership throughout the process.[9] Foreign firms, too, have been given a direct interest in German concerns, or companies have been formed in which foreign and German concerns have participated. This has been the case in the oil and margarine industries with the Dutch, in the rubber industry with the British, in ores with the French, and in electrical and textile industries and in shipping with the Americans. By this means raw materials have been secured and a field ensured for the sale of the finished product. In harmony with these changes has been the internal organization of industry, particularly the intensified growth of syndicates, which have reached new proportions in iron and steel, shipping, chemicals, automobiles, the oil and fat industries, brewing, electrical goods, and other lines.[1]

III

The German experiences with foreign trade which have been reviewed furnish some interesting light upon the theory of foreign exchange under inconvertible paper. It seems evident, for instance, that too violent a descent of the rate may check rather than encourage export, not only by precipitating a buying panic at

9. To protect the foreign firm a number of trust organizations have been created which guarantee that the raw material provided will be used as agreed in the contract, and that the property rights of the foreign firm will be protected; ibid.

Adoption of the method of the Veredlungsverkehr has been suggested, in the form of a modification of the Wiesbaden Agreement, as a means of facilitating reparation payments in kind. This is the so-called plan for "free negotiations."

1. Statist, February 19, 1921.

home such as occurred in Germany last fall, but by throwing exporters, as well as importers, into confusion. With the mark falling so fast last October and November exporters were afraid to quote prices. It is evident, too, that the stimulus of the declining rate is operative only when exports are invoiced in the foreign currency, for the decline in the *internal* value of the mark would render it hazardous for German exporters to enter into time contracts for the receipt of payment for exports priced in German marks. Eighteen foreign trade boards, including those for chemicals, pottery, wood, cement, iron and steel, ships, paper, and leather, issued regulations requiring exporters to high-exchange countries to invoice to the customer in the foreign currency.[2] German exporters refused to sell to Italy except in lire, all unfilled orders to be canceled if those terms were refused.

That, with these limitations, the stimulus was present, tho obstructed in the later period reviewed by trade restrictions and other influences, is shown by the course of prices. An index of export prices is not available, but prices of individual export groups bear plain evidence. The rise of textile prices, a principal branch of export, was extremely rapid last year during the period of falling exchange. With a base of 100 in 1913, the index for this group was 1773 in May, 1921, 4176 in October and 6518 in November. This was nearly double the November index for all commodities (3416).[3] Export and internal prices for earthen and chinaware, chemicals, worsted yarn, pocket knives, and dolls, collected from invoices, showed an increase of the export price over the internal price of 20 to 216 per cent for the various classes

2. Manchester Guardian, November 5, 1921.

3. This is the "Federal Wholesale Index," of which the textile price index quoted is a part.

of goods.[4] J. M. Keynes indicated last November the discrepancy between the internal and the external value of the mark very ingeniously by pointing out that at the then existing exchange of 1200 marks to the pound sterling "the value of the entire note circulation would be below £80,000,000, which is less than one-fifth of the British note issue, altho Germany uses notes much more and checks much less than we do. There is the further paradoxical result that, since the gold reserve of the Reichsbank is worth nearly £60,000,000, the total circulation of notes valued at the present rate of exchange (and leaving out of account the unfunded debt) is covered by gold to the extent of 75 per cent, a

4. GERMAN INTERNAL AND EXPORT PRICES

Commodity	Amount of invoice at German internal price	Amount of invoice at export price	Difference	Percentage increase over internal price
Decorated chinaware	5,141.67	6,246.50	1,104.83	21
"	1,016.09	2,225.53	1,209.44	119
"	954.58	1,414.16	459.58	48
"	448.40	612.50	164.10	37
"	263.27	532.50	269.23	102
Porcelain	37.57	84.20	46.63	124
"	802.03	1,816.32	1,014.29	126
Earthenware	103.77	328.00	224.23	216
"	1,141.41	3,003.37	1,861.96	163
Locks	967.50	1,212.70	245.20	25
Chemicals and laboratory supplies	79,563.00	106,364.00	26,801.00	34
Sundries (aluminum ware, pocket knives, dolls, etc.)	2,784.00	4,617.00	1,833.00	66
Worsted yarn	19,413.30	53,282.22	33,868.92	174
"	12,870.11	16,666.32	3,796.21	30
"	14,888.94	18,328.77	3,439.83	20

Both internal and export prices were given on the invoices, together with the rates of exchange to be applied to the quotations. Therefore the figures in the table represent actual transactions between specific firms on a particular date, chiefly in April, 1921. Many of the export prices run over 100 per cent above the internal quotations, but there is little consistency among them. One shipment of decorated earthenware, for example, may run 20 per cent above the domestic price and another may be over 200 per cent in excess. The whole series of quotations seem to indicate that the German manufacturers were charging American purchasers what the traffic would bear. This conclusion implies no condemnation of German methods, but the table shows that Germany has an advantage over foreign competitors in the chinaware industry because of depreciated exchange alone.

From "Depreciated Exchange and International Trade," U. S. Tariff Commission, 1922, p. 53.

figure rivalled only by the Federal Reserve Banks of the United States." [5]

The German price situation thus bears out the view that in a period of depreciating exchange export and import prices rise first and in close sympathy with the exchange, whereas the rise in internal prices follows more slowly, the gap between the two providing a stimulus to exports and a burden upon imports. It indicates unmistakably also that the price changes *follow* the changes in the exchange rate. It is equally clear that in this instance the increase in note issue has *followed* the decline in exchange and the consequent rise of prices. As the *Economist* has pointed out, one might even argue humorously that increases in note issue have been good for the exchange, since in 1921 the rate of increase in note issue was only about half that in 1920, but in the whole year 1920 the mark fell only from 50 to 73 for the dollar, whereas in 1921 it fell from 73 to 310.[6] The greatest rate of increase in note issue yet recorded was in the first half of 1920, when the circulation rose from 49,807,000,000 marks to 67,608,000,000; yet in those six months the mark exchange rose from 50 to 38 for the dollar, and between the end of January and the end of May when inflation was most pronounced of all the mark recovered from 104 to 35. Likewise in 1921, during the period of falling exchange, note issue rose but five billion marks from the end of May to the end of July, three billion marks in August, six billions in September, five billions in October and nine billions in November, the months of sharpest exchange depreciation, but increased thirteen billions in December when the exchange rate improved almost 100 per cent.

5. Manchester Guardian, November 9, 1921.

6. London Economist, November 19. 1921; see too a very interesting and suggestive article by Robert Crozier Long, Fortnightly Review, December, 1921.

So far as the German case is concerned, it is evident that to demand restriction of inconvertible paper as the fundamental cure for depreciating exchange is to beg the question; the Reichsbank has not inflated for its own amusement. The same may be said of the view that the fundamental cure must be to "balance the budget"; that budgetary deficits necessitate further note issue to cover the deficit, and that the increased issue causes further increase of prices and hence depreciation of exchange. The first part of the statement is true so far as it goes, but it does not start far enough back. What causes the budgetary deficit? It seems unmistakable from Germany's experiences last year that the sequence of events was as follows: the reparation payments by greatly increasing the pressure of demand for foreign bills wherewith to make remittance, and also by impairing confidence, drove down the value of the mark in exchange. Import and export prices rose in close sympathy with the exchange, and domestic prices followed upward more slowly, external and internal prices tending to equalize gradually whenever the exchange quieted down or improved, and also toward the end of the period of extreme depreciation, by reason of the effect of the domestic buyers' panic in October and November. With prices rising, the state and private demand for credit was increased. To meet customers' demands for bank notes, bankers, holding their liquid assets mainly in treasury bills and only a minimum of the non-interest-bearing Reichsbank notes, would present treasury bills for encashment in bank notes, increasing the Reichsbank's holdings of treasury bills and forcing increased issues of bank notes in payment. At the same time, since the revenue of the government is relatively fixed in the budget, whereas expenditures increase continuously with the rise of prices, the resulting

deficit compels further issue of bank notes and treasury bills. If this analysis is correct, relief for Germany's financial and monetary difficulties must be sought in the reparations question and the foreign trade, rather than in some point farther down the chain of consequences.[7]

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7. It is not intended to deny that in an inconvertible paper situation the multiplication of note issues is *one* major cause of exchange depreciation, the reasons compelling increased issue being usually both internal and external. For criticism of the doctrine of "purchasing power parity" and its applicability to the German case, see John H. Williams, "Foreign Exchange under Depreciated Paper: A Criticism of Cassel's Doctrine of Purchasing Power Parity," Journal of the American Bankers Association, January, 1922.

REVIEW

COLE'S "THE DOMESTIC AND FOREIGN WOOL MANUFACTURES AND THE TARIFF PROBLEM"

THE first and most natural thought that will occur preliminary to any review of Dr. Arthur H. Cole's able article, "The Domestic and Foreign Wool Manufactures and the Tariff Problem," which appeared in the November (1921) issue of the *Quarterly Journal of Economics*, will be one of deep appreciation of the extensiveness and general excellence of Dr. Cole's survey, and his entire freedom from partisanship in the presentation of his findings. It is not surprising that the article has created widespread interest and comment among students of wool manufactures, for it is without question one of the most notable contributions that has been made to the literature of that industry for many years by anyone who has been able to bring to the task that personal detachment and distinctly judicial measurement that Dr. Cole has so successfully maintained throughout his discussion.

But in proportion as Dr. Cole's analysis of the comparative and competitive positions of the domestic and foreign wool manufactures is above the average merit of such papers, it sets for itself a standard under which the author's occasional too great brevity, or failure to pursue a phase of the inquiry to its logical conclusion, stand out in more contrast than they would in another article of less general excellence. Therefore, while an attempt will be made here to review Dr. Cole's discussion in a rather comprehensive way, the thoughts to be offered in this brief *critique* will be more supplemental than controversial in character, and, it is hoped, will only be critical where they can be constructive, by perhaps throwing some

additional light upon the particular matter under examination.

It would seem that there is something short of full and complete discussion in Dr. Cole's reference to the depleted wool supplies of the European countries at the close of the war and since. While it is true that in the months immediately following the armistice those countries did experience difficulties in procuring wool in sufficient quantities for their needs, it is also a fact that those difficulties have been so far overcome that Germany's importations of wool in recent months have substantially exceeded those of a corresponding period in the years preceding the war. In the past year Germany's importations of South American wool have exceeded those of any other country, being largely in excess of those of the United States and Great Britain; and in addition to these large supplies, Germany has been a heavy buyer at the English and Continental sales, and also has secured large quantities in the primary markets of Australasia. Upon the other hand, neither Belgium nor France has experienced any difficulty during the past year in obtaining all the wool that could be used. While Poland and Czecho-Slovakia probably have not yet progressed so far in this respect, plans partly consummated and partly in course of consummation give assurance of a satisfactory flow of such raw material to those countries during the ensuing year.

In the course of offering supplemental facts, it will be necessary, too, to express some disagreement with Dr. Cole's statement that labor cost data on the current situation are scarce and difficult of ascertainment. Information concerning labor costs in Germany is not lacking, for copies of the complete official wage agreements for the German industry have been made available, and translations have been extensively published in the trade papers of this country, and in the Reports of Hearings held by the Ways and Means Committee of Congress. Subsequent changes in the schedule also have been reported from time to time during the past year, the latest showing an advance of 105 per cent from October, 1920, to November 1, 1921, in which time the value of the mark had

declined from 1.3 cents to 0.35 cents. So, while the decline in the mark would have required an increase of 371 per cent to have sustained the wage rates at even their low level of October, 1920, the actual advance was but 105 per cent, which in effect means that, competitively, German wages in the woolen industry have been reduced by 71 per cent. Of course, further advances in wages must and will be made; but the *lag* in adjustment of wage rates to depreciated currency is so great that a long time must elapse before earnings can be brought to anywhere near the pre-war German rates, which then were far below the pre-war wages in the United States. As our American rates are now upwards of 120 per cent higher than in 1913, the disparity in labor costs has become grotesque. And labor being by far the greatest factor in conversion cost, any disadvantage which Germany may have in fuel cost is far outweighed by the *increase* in the spread between the labor costs, to say nothing of the preëxisting difference.

But entirely apart from the abundantly available data concerning costs is the more convincing evidence offered in prices quoted for conversion of raw material, and the prices at which yarns and fabrics are being freely offered for sale by German manufacturers.

The principal cause of the alteration (*increase*) in competitive strength should *not* have been difficult to ascertain. In the case of Germany, for example, it is clearly due chiefly to the indirect lowering of wages resulting from a depreciating currency, increases of wages not keeping pace with the decreasing value of the money in which they are paid. A secondary cause is the assumption by the government of a part of the cost of some of the services to industry, as, for instance, a portion of the costs of transportation.

Neither cause can be permanent. Depreciation of currency will cease when that currency no longer has a value as money, at which time some new and more stable circulating medium must replace it. With a stable currency, wages will, in time, reach a more stable level, altho that level may, and probably will, be somewhat lower than before the war, because of the impoverished condition of the people. The lower standard of

living mentioned by Dr. Cole is an effect, rather than a cause. When currency depreciation is complete, the government will no longer be able to subsidize industries by assuming part of the expenses properly chargeable to the production costs of those industries (such as transportation), because the government will find it impossible to finance such payments with additional issues of paper money.

In countries where the depreciation of currency has been much less serious, the result has been the same in kind, altho less in degree; consequently in Great Britain, France and Belgium, labor costs are not so low as in Germany, altho much more below the level of wages for similar occupations than before the war. If these countries check the depreciation of their paper money by restricting its issue, wages will, in time, stabilize at the current value of the paper money, so that the purchasing power of labor probably will be only slightly lower than before the war.

Dr. Cole refers to the fact that, largely as an indirect result of the war, British manufacturers have adapted themselves to the use of the lower, as well as the higher, grades of raw wool, altho previous to the war these lower grades, which require chemical treatment to eliminate the vegetable matter, had to be disposed of on the Continent; and he is inclined to regard this as a permanent broadening, and therefore advance, in the technique of British manufacture. We lean more to the view that the use of the inferior wools mentioned was a war necessity, like the use of inferior kinds of bread in the United States, and that as a consequence it is unlikely that, with the passing of the necessity, the use will continue to more than a limited degree. Indications afforded by the wool sales already seem to show a tendency to return to former standards of selection. It is altogether probable that the same causes will continue to operate (some of them obscure, others related to varying national types of product) which originally influenced the use of certain wools in the Continental countries which were not acceptable in Great Britain or the United States.

In a somewhat similar way may be explained the employment of the South American low crossbreds in our carpet

trade. This seems to have been due to the abnormally low prices at which these wools have sold, these low prices resulting from large stocks accumulated by reason of the derangement of transportation and manufacture by war, and happening at a time when much of the usual supplies of carpet wools originating in Russia and the Orient were cut off.

This brings us to that section of Dr. Cole's discussion which he directs to technical equipment, with especial reference to the automatic loom, the continuous woolen spinning frame and the warp mill.

The automatic loom, for woolen goods which require more than one shuttle, is a sufficiently recent innovation to be still in the development stage. It is gradually being adapted to an increasing range of fabrics, but for many kinds of cloth its use is still regarded as experimental.

The continuous woolen spinning frame also is so recent an innovation that there has not yet been time for its possibilities to be thoroly investigated and tested. It first came under notice just prior to the beginning of the war, and was then a novelty even on the Continent.

Of all of these, and without questioning their ultimate value to the industry, it may be said that the basic machinery of a textile plant, and its employment, are of such a nature that revolutionary changes cannot be made quickly. It requires time to determine the factors of practicability, economy and adaptability to the product of each kind of goods, before the risk of heavy capital expenditures can be incurred.

In his final paragraph upon this subject, in which he refers to warping and hand-dressing, it is not clear whether Dr. Cole is distinguishing between the old-fashioned upright warp mill (turned by hand power) and the horizontal sectional warp mill operated by mill power, or between the latter and the "slashing machine." If the former, he can hardly mean that the hand warper with vertical creel is in general use in American mills. It is still employed to a limited extent, but in work for which it is the most suitable appliance, e. g., the making of short, sample warps. If his reference is to the use of the "slasher" as contrasted with the sectional warp mill, he over-

looks the fact that the "slasher" is only of advantage in the manufacture of certain kinds of goods for which large lengths of identical warp are employed. The sectional mill is the better where (as in the case of many kinds of patterned and some plain goods) the quantity to be of one pattern is much smaller.

Altho it was perhaps unconsciously so, Dr. Cole's résumé of the activities of the British woolen industry in scientific research was in a vein that would be likely to lead the average reader to believe that the British industry is far ahead of the American in that respect. The lead, if any, that the British may hold in this respect is so slight as not to be of any advantage. The work of their Research Association is so new that it can still be measured in months. Prior to the recent institution of coöperative research work by British manufacturers, it is probable that more was being done by individual American mills than by individual British mills. And altho they have a little the start of our industry in the coöperative undertaking of such research, it has been under serious consideration here for some time, and it seems not unlikely that the plan proposed several years ago on behalf of one of the associations in this industry may be given practical effect. That plan contemplated the utilization of the excellent equipment of the Bureau of Standards in coöperation with and under the practical counsel of a committee representative of the industry. In the Bureau of Standards the government has the nucleus of a splendid textile research laboratory, but thus far the work accomplished there has been for the most part of too academic a character to have much practical utility for the improvement of productive processes and methods. It may be noted in passing that the author gives further evidence of attaching undue weight to the recent British and German movements in technical inquiry, when, in a later part of his article, he expresses no hope whatever of any great invention or refinements of process originating in this country.

Dr. Cole mentions the decline in the British standards of acceptable workmanship; but this disadvantage is not peculiar to Great Britain. In the United States, as probably in all countries participating in the war which had well developed

wool manufacturing industries, there was a serious deterioration in standards of production, in respect to both quality and efficiency. The causes were: (*a*) the withdrawal of many skilled workers for military service and manufacture of munitions; (*b*) the diversion of production to goods for military use (uniforms, blankets, etc.) which by reason of their plain and staple character and coarser structure did not require the skill and refinement of manufacture and finish that goods for civilian use did; (*c*) the government's urgency for quantity output, which was of necessity opposed to that carefulness requisite for the old standards; (*d*) a general shortage of labor, which made the procurement of other employment so easy that operatives who were not naturally painstaking could not be held if old standards were maintained. Recovery from this, one of the minor demoralizations of war, will come with the general liquidation through which all industries are now passing.

It would have been exceedingly interesting to American woolen manufacturers if Dr. Cole had submitted a comparison of actual figures in support of his statement that coal, dyestuffs and taxes, as elements of expense, have increased more in Great Britain than here. The percentage of increase in the cost of coal may be greater in Bradford than in New England, but the actual cost there is still less than here. With regard to dyestuffs (a comparatively small fraction of the total cost of manufacture) the relative charges are not notably different. As to taxes, the system in both countries is so complicated that general comparisons are impossible. No figures showing the total taxes for the woolen industry of either country, or the average rate for that industry, being available, comparisons can, therefore, only be made between particular establishments of similar capital and earnings, in each country. From the limited data accessible it would appear that for the smaller establishments there may be a little advantage here, and for the larger mills with earnings greater in amount but not in percentage, the disadvantage is with the American mill. This is one of the points upon which Dr. Cole might have procured definite information.

American manufacturers may, with justification, take exception to the phraseology in which Dr. Cole, in opening that phase of his discussion relating to questions of labor, refers to British "manufacture of somewhat better goods at somewhat less cost." If comparison be made between similar kinds of American and British goods, the characterization of the latter as "somewhat better" is of doubtful applicability. The finest cloths made in the United States will compare favorably with the finest made in England. Of the major quantity of goods made in both countries — the great yardage of pure, new wool fabrics (largely worsteds) of good quality and medium price — the advantage in quality is with the goods made in the United States. In the lower grades, made largely of by-products and substitutes for new wool, it has generally been conceded that the English mills are more skillful. The phrase "at somewhat less cost" is *somewhat* less than expressive of the full measure of difference between the conversion costs of Britain and the United States.

Dr. Cole then makes the statement that "comparatively and absolutely the American labor forces have probably improved in character in recent years"; and that "at least, were another investigation to be made such as that of the Tariff Board into the turnover in the American mills, it is unlikely that such extraordinary frequency of movement into and out of the wool manufacture, and from one mill to another within the industry, would be shown." If there has been any improvement in the skill and efficiency of the average workers in the domestic industry since 1911, or if the labor turnover has been reduced as compared with its ratio at that time, it would be welcome news; but just as Dr. Cole explains was the case in Britain, and as we explained, a few paragraphs back, its similarity here, the derangements and demoralizing influences of the war have operated in just the opposite way.

As to what Dr. Cole describes as the "orderliness" of the British industry — that is, its established channels for the settlement of wage problems — it is true that wage agreements in the British industry have generally been attended with little difficulty; and the experience there is being studied

with care and interest by leaders of the industry here. The concentration of authority in the negotiation of the agreements in Britain has not, however, proceeded so far as Dr. Cole appears to think. Separate crafts exercise quite distinct control, and in connection with wage agreements some of these crafts have by no means so completely avoided disputes and strikes as he intimates. It will be time enough to compare the results there and here when the liquidation of war rates has been more nearly completed than it is at present. In the consideration of labor relations it must not be overlooked that, due to the longer period of training, the trades unions in Great Britain have evolved a type of leadership much better qualified to negotiate understandingly and with comprehension of controlling economic conditions. In one particular the British industry acted with much better judgment and with clearer vision, namely, in relating wage rates to cost of living and tying the movements of the one quite closely to those of the other. This arrangement, if it continues to function as well in the future as it has thus far, will prove, as Dr. Cole states, an added element of strength for the British mills in competition with those of the United States.

In commenting upon the opening remarks of Part 2 (United States Technical Equipment) of Dr. Cole's paper, we might point to these as containing another misleading implication, i. e., that it is by the manufacturers (employers) that this protection is enjoyed. The word "producers" is really used, but since the context has reference to manufacturers it will of course be read as synonymous with manufacturers. From a political opponent of the system of protective tariffs such an implication is to be expected. But the student of economics must recognize that the purpose and effect of such tariffs is to protect and sustain a higher wage level. He may consider that an unwise policy and may question the benefits derived from it. He may strongly and logically oppose such a policy. But if he is a thoro and an honest student of the subject he will neither deny nor evade the fact that with labor costs what they are here and abroad, the domestic woolen industry could not continue in operation without it, and with wage costs the

same here and there the industry here could operate as successfully and as prosperously as in Europe. There may be room for difference of opinion as to whether the woolen industry is worth having, and as to the advantages of the higher wages; but a thoro and unprejudiced investigator could not doubt that in the case of woolen manufacture the high American wage rates cannot be sustained without high tariff rates; that whether judged by specific examples or by the industry as a whole, British woolen manufacturers (proprietors) have been, during the periods of the Dingley and Payne-Aldrich tariffs, as successful and prosperous as those of the United States. Conscious of these facts, such an investigator would not allow those who read his report to derive the impression that it was the manufacturers who were enjoying the protection of the Payne-Aldrich rates. It is but fair to Dr. Cole to assume that he used the word "enjoying" in the sense one does when saying that he is "enjoying good health," that is, in a normally sound and healthy condition. But such use is obviously unsuitable in any case where it will convey an erroneous impression of the attending circumstances.

In his estimate of the effect that the Underwood tariff would have had upon the domestic woolen industry if the war had not intervened, Dr. Cole justifies most of the criticisms here expressed. He says "some sections of it would have had to curtail operations or shut down completely." But in his qualification that "the whole industry would by no means have 'gone to pot,'" he fails to comprehend that it would be impossible for a part of the industry to continue in successful operation while some sections had to curtail operations or shut down completely; for if it had been possible to continue the manufacture of certain products, intensified competition to obtain the restricted volume of business left for domestic mills must unfailingly have brought all to the same general state of idleness, or restricted production and short-time employment. Only for a very short period is it possible for part of the industry to continue in full and prosperous employment while all the rest is prostrate. At such a time the attention of the less fortunate mills is immediately diverted to the kind of

production which is in a better estate; and the output of the latter having been always equal to the demand, a large invasion of their field would curtail operations, cause unemployment and turn profit into loss, first by direct price competition, and still more powerfully and effectively by increase of the unit overhead cost.

While Dr. Cole correctly estimates the influence of the war in suspending the consequences of the Underwood Tariff, not only preventing entirely competition from foreign woolen manufacturers but creating a great military need for the products of the domestic mills, he might have added that this adventitious and wholly deplorable intervention has engendered a false confidence in the sufficiency of the Underwood rates. Even among manufacturers and workers there are many who, content with their war-created prosperity, are apathetic to the subject of tariff legislation. To the indifference of ignorance and the interested propaganda of the international bankers the Congressional delay in tariff revision is largely attributable.

Again the lack of complete explanation is likely to lead the general reader to entirely wrong conclusions, where Dr. Cole refers to domestic wool manufacturers being "content" under lower tariffs prior to the Civil War. He neglects to note that the Civil War itself increased the disparity between American and European wages; to sustain which increased disparity, higher tariff rates were inevitably necessary. He also overlooks the fact that prior to the Civil War the woolen industry in the United States was comparatively undeveloped, being then nowhere near able to supply domestic requirements, either in quantity or variety of production. The tariff rates of that period had not been sufficient to so expand the industry as to make the country independent of foreign supplies. The policy adopted in consequence of that war had for its express purpose the development of the industry to the point where it could be capable of completely supplying the requirements of the country, which it did, at the same time greatly improving the quality of goods made, and greatly reducing the relative prices of all qualities.

Dr. Cole calls attention to the fact that "while weaving capacity has increased at most 15 per cent, the number of woolen spindles has increased over 25½ per cent, French system worsted spindles 65 per cent, and worsted frame spindles nearly 25 per cent." That worsted yarn production has, in recent years, increased in larger ratio than weaving capacity, is accounted for by three quite natural causes, namely:

(1) The constantly increasing preference of the public for worsted rather than woolen suitings. During the past thirty years there has been a progressively increasing diversion of looms to the weaving of worsteds. This has made necessary a greater increase in spinning than weaving capacity.

(2) The enormous increase in the use of knitted garments made of worsted yarns. Looms not being employed in the fabrication of knitted wear, the increased installation of yarn-making machinery for this purpose has no corresponding increase of looms. To judge of the relative growths of yarn-making and yarn-consuming machinery, looms and knitting machines should be considered together.

(3) The public preference for fabrics of lighter weight and finer texture has been steadily increasing for at least ten years past. Cloths of this kind have to be made of yarns of finer size, to spin which a proportionate increase in the number of spinning spindles is necessary.

The case of woolen yarns is somewhat different. In proportion to the diversion of looms from the weaving of woolen to the weaving of worsted goods, there was need for fewer woolen spinning spindles, and for a number of years the decreasing number of cards and spindles was quite evident. This was to some extent arrested by the increasing preference of the public for fabrics of lighter weight, made of yarns of smaller diameter, to spin a given quantity of which more spindles are required. This tendency has already been referred to above, in the case of worsted yarns.

Much the larger part of the recent increase in the equipment for making woolen yarns was a result of the demands of the United States government for an enormous output of

blankets, overcoats, uniforms, leggings and other woolen articles for the army and navy. To the extent of this increase the woolen spinning capacity of the country is probably redundant, and it is not unlikely that a decrease rather than an increase in woolen cards and mules will appear in the next census returns, altho the present large use of knitted garments, supplemental to other clothing, results in some increase in the employment of woolen yarns, not comparable, however, with the increased use of worsted yarns by the knitting branch of the industry.

Dr. Cole refers to the increased call for yarns of finer size, but thinks "the production and use of such yarns is less satisfactorily fitted to American conditions than in the case of the coarser yarns." This conclusion is not substantiated by experience. It is not a fact that in the manufacture and employment of fine yarns the speed of spinning spindles must be lowered, and that of the loom modified. It may be true, in some respects, that greater care is required in the making and the use of these yarns; but even that may well be questioned. The very greatest care and skill is undoubtedly required in the use of some of the coarser counts of yarn which enter into the construction of fabrics which have to be subjected to finishing processes necessitating a high degree of skill and care in the making of the yarns. But neither the spinning of the yarns nor their subsequent use present technical difficulties that American mills have not been able to successfully meet, as is convincingly shown by the vast quantities of such yarns that have been made and used in American mills. Altho spindle and loom speeds do not have to be reduced, it is true that the output in pounds per spindle, and in yards per loom, is less for fine than for coarser yarns. This, of course, is merely a consequence of the fact that the finer the size the less the weight per yard of yarn, and the greater the number of threads (picks) that must be woven into a given length. This means that the labor cost, and the total conversion cost, are higher per pound and per yard than for heavier yarns and fabrics; not, however, because of slower speeds or greater skill, but because a given amount of labor and expense are applied to a

smaller quantity of material. Such goods, in which the ratio of conversion cost to material is relatively high, naturally show the greatest percentage of variation between foreign and domestic costs, because of the larger element of labor — not because of technological difficulties. Under the Tariff Law of 1909 the finer sizes of yarns were not made in the United States, not because skillful operatives and suitable equipment were lacking, but merely because the *ad valorem* duty was insufficient to offset the differentiation in conversion cost. Goods made of these finest yarns being in the luxury class, duty should be comparable with that for silk goods, which would be quite sufficient to permit their manufacture here, and which would, in addition to increasing opportunities for domestic employment, provide the means for training a larger number of operatives to the highest degree of skill.

While Dr. Cole mentions the kind of fabrics for which the French system yarns are used, he does not seem to fully comprehend that the characteristics of the French yarns are essential for such goods and therefore assure a legitimate demand for such yarns so long as the conditions are propitious for making in American mills the kinds of cloths for which they are adapted. There is, therefore, no "questionable advantage to the American industry as a whole in the production of these yarns." There are no technical obstacles to their successful production and use, and they are essential to the making of certain classes of goods that ought to be made in the United States.

It is probably true that foreign competition may be strongest with respect to those yarns made by the system generally employed in the Continental countries of Europe and the goods made in those countries from such yarns. This, however, will not be due to any inaptitude for the manufacture of such yarns and goods in American mills, where the necessary ability and skill already have been demonstrated on a large scale. The strongest competition from Continental countries which Dr. Cole (in common with representatives of American industry) contemplates, will be entirely due to the very low scale of Continental wages and living conditions.

Of Dr. Cole's balancing of the advantages and disadvantages of particular types of machinery, it may be said that he is dealing with a subject akin to that of deciding which make of automobile is best. The judgments he reflects are those of individual preferences, or of suitability to particular requirements. They have no more significance than that a Pierce-Arrow is superior to a Ford (or vice versa, according to use and viewpoint). The last word upon this subject is that all types of the foreign machines are accessible to American mills and are extensively used by them, just as the American types are accessible for foreign mills. In either, the selection is determined by particular needs, personal experience, and to some extent personal preference — just as the selection of a make of typewriting machine is determined by special use or individual predilection.

Dr. Cole expresses the unqualified conviction that "the outlook for the future through progressiveness leans distinctly in favor of the foreign industry." It would be interesting to learn in what ways Dr. Cole thinks the foreign industry exhibits the greater progressiveness that makes the outlook for better equipment distinctly in its favor. Other than the slightly earlier beginning in Great Britain of research work through associated effort, his article affords no evidence of a greater progressiveness there. And, as previously noted in our discussion of this British research work, undertaking the researches under a coöperative plan a few months sooner than it is similarly begun in the United States is not indicative of any less interest or smaller achievement in such investigations.

We might diverge here for a moment sufficiently to mention that the reference to "infant industry" in one of Dr. Cole's notes (27) is a more superficial touch than we have a right to expect from a serious student earnestly seeking the facts, as we believe Dr. Cole to be. His allusion implies a belief that the only need for a protective tariff is to develop infant industries. That is one important purpose for which the protective system is employed, and is sometimes needed for very large and lusty infants. The arguments for protection of the American dyestuffs industry rest almost entirely upon the

infant industry theory, altho the establishments engaged in that business are among the largest and financially strongest in the country. The factor of labor cost is not the controlling one in determining competitive strength in the marketing of dyes. It is for quite different reasons, and those wholly characteristic of the "infant industry" (irrespective of its size and financial resources) that the domestic dye industry is in need of substantial tariff protection at the present time, and a few years hence it may be altogether independent of the need for any form of protection. But there are other industries which in this country never were in the infant class, and for which arguments applicable in the case of new industries are never advanced. For these the factor of labor cost is controlling in competition; and that factor endures as long as a great discrepancy exists between labor costs in the United States and competing foreign countries. The woolen industry makes no pretensions of infancy. Its representatives have many times said that if American wages are reduced to the European levels, or if all European mills will pay wages as high as those paid in American mills, the woolen industry of the United States will not need so much as a revenue tariff to assure its continuance.

Dr. Cole mentions cloths which, in substantially uniform quality, color and finish, may be procured in this country in any bulk desired, which have filled a wide and fairly constant demand from our consuming public. But the phraseology of the added statement that "the virtual lack of such fabric production in other countries may with such other factors as assurance of delivery, of 'repeat' and credits, account for the alleged disappointment of cloth buyers who in 1913–14, anticipating the new lower tariff, journeyed to Europe and returned without placing any considerable orders," carries an implication of some sort of automatic protection entirely independent of tariff duties.

Mass production of certain kinds of staple goods in the United States has been a coincidental development of the use of ready-made clothing of good quality, and has been possible because of the protective policy having permitted and en-

couraged that development. The very general use in America of ready-made clothing and a degree of standardization incident thereto are now accomplished facts. The custom will not change, even tho the source of supply does. As comparable with less staple goods made in smaller quantities, the labor cost is slightly less. There are, however, no methods employed in the manufacture of such goods that are not known and in use in European mills; so that if the tariff rates are low enough, the foreign mills can equally well produce goods of this kind in mass and effect a saving in labor cost which would give a similar competitive advantage for such goods as for those made in smaller quantities. It is true that the lower the ratio of labor cost to total cost, the less the competitive advantage; and that, therefore, on kinds of goods that can be made in great quantities there would be slightly less competitive advantage than for those made in ordinary quantities. But the lessening of the competitive advantage held by the foreigner would be small.

Dr. Cole states: "In the case of the finer grades of goods, some net advantage seems to inure to differentiated European industries." The greater individual attention to design, more careful watch over methods of manufacture and finish, essential for goods of the finest quality and newest effects, have not been exclusive characteristics of the mills of other countries. Such specialization has been successful in the United States, but is associated generally with smaller manufacturing units than those in which staple goods are made. Increased labor and care imply higher labor cost, whether in Europe or America. But of course, and conversely to the case of staple goods, which we referred to above, fabrics requiring the greatest labor costs will show the greatest disparity between American and foreign costs (disregarding the raw wool duty and its effects), and will require a somewhat higher rate of protection. As already mentioned in this article, goods of this kind, being in the luxury class, can well carry the higher duty necessary to maintain a completely diversified industry, permitting the training of some of the personnel to the most expert stage, thus stimulating the entire industry to constant improvement.

It is a fair statement that improvement in machinery, in equipment and plant devices, has not been notably different in number or value, in the United States and Europe. Dr. Cole, however, rather undervalues the importance of these improvements in the last sixty years, as compared with those of an earlier period of similar length. If less conspicuous historically, the economic value and far-reaching influence of the later inventions and improvements were no less important than the earlier and cruder projections.

After a great basic invention has been made available and has undergone the important early improvements that grow out of practical experience, it is not usual that a succession of equally fundamental inventions in the same field follow. Therefore what the author has to say of the fact that there has been no fundamental change in recent years in the machinery and equipment of either the woolen or worsted branch of the industry, is equally true of the sewing machine, the reaper, the printing press, the telephone and most of the other great inventions. There are improvements and refinements, but these are not revolutionary in character, or spectacular. However, in the Bradford combing system, in worsted spinning and in automatic weaving, great changes have slowly and constantly been developing.

Dr. Cole is emphatic in his statement that "the leading organizations in the American industry show no interest in the deliberate promotion of research and invention, and our textile journals, presumably following the tastes of their clienteles, devote little space to the matter." But American textile journals will resist the statement that they devote little space to reports of research and invention. An examination of the files of the older publications will, we think, disclose accounts of most of the inventions, domestic and foreign, that seemed to possess any real utility for the industry.

Another aspect of the matter is this. One of the controlling influences which has caused most of the equipment of Bradford combing and spinning to be brought from England has been that at first, and for a considerable subsequent period, the machinery was to a large extent controlled by British

patents, which delayed the beginning of the use of that kind of machinery in the United States and gave the British machine builders a long lead which only in more recent years it has been possible to overtake. Another has been the large proportion of managers and workmen in American worsted mills who obtained their training in England and there developed predilections, if not prejudices, in favor of the British-made machines. To some degree the same tendency exists in the case of Continental types of machinery. Managers and workers in American mills who derived their experience in Continental mills, have a tendency to prefer the installation of Continental types of machines in the mills in which they are engaged.

Dr. Cole very much deprecates the existence in this country of competitive bidding for labor, and says that so long as it is continued wages are bound to be maintained frequently at unnecessary heights, and that the only effective remedy is through a better control based upon increased coöperation among American manufacturers. Competitive bidding in the matter of wages does exist in the woolen industry here, and there are many who believe that competition is more favorable to the welfare of the workers than the kind of collective bargaining by entire groups which Dr. Cole seems to approve and to consider an evidence of advancement in executive management.

As a third possible path of advancement for the American woolen industry, Dr. Cole suggests standardized products. Many of those who, from the nature of their industrial responsibilities, have had to give intensive study to the subject of production possibilities, are convinced that further concentration upon standardized manufactures cannot be made successful, and that such concentration has already proceeded further than the tastes or preferences of the public will justify. The most hopeful line of development for American mills of the medium and smaller sizes would rather seem to be that of specialized goods for which individualized repute can be acquired. It is in such fields that the greatest successes have been made by European woolen manufacturers, and in this

country a few illustrious examples give promise of similar possibilities. The greatest weakness and the biggest evil of the domestic woolen industry has been the fickle pursuit of ephemeral successes. When one mill seems to have its product more than commonly in demand, the succeeding season finds many others offering similar goods. Constant change in the kinds of goods manufactured entails changes in processes and methods which are unfavorable to the attainment of the highest skill and reputation in any kind.

Summing up his observations, Dr. Cole says:

> The deductions to be drawn from these general conditions of possibility and probability obviously will differ sharply according to one's economic or political faith. For one who views with regret the indefinite maintenance of tariff aid for any industry which shows no real prospect of ultimate self-sufficiency, the situation is discouraging. He cannot recognize in the wool manufacture as valuable a member of the body economic (if one may use the phrase) as the majority of our more important industries. On the other hand, for the protectionist who believes that domestic industries, whatever their competitive strength, should be given the amplest support against the cheaper working foreign manufactures, the details and the exact measurement of the comparative disadvantage in the American wool-using industry are of no consequence. It suffices for him that there is real and apparently permanent disadvantage. And to him the case is conclusive for the continuance of a system of duties on woolen and worsted products substantially like that which has been in force during the last half century.

Here Dr. Cole again overlooks the basic fact, which he has himself fully and abundantly established, that it is not a question of self-sufficiency. Given identical wage costs, American woolen mills will be as seld-sufficient as those of Europe. It is entirely a question of whether American standards of wages and living shall be maintained. As already has been said, there are two ways in which the wage equality can be brought about: by bringing American wage costs down to the low level of those of Europe, or by bringing European wage costs up to the American level. As one of our well-known manufacturers recently wrote to an English correspondent, the former is not only undesirable, but if attempted

would meet with a revolution, while the latter would be highly desirable and would meet with no opposition whatever from the workers. Therefore, those who wish to retain in the United States a complete and self-contained wool manufacturing industry without a protective tariff should devote their efforts to bringing the living standards of the European workers up to those of American workers. Those who think the retention of the industry is not of enough importance to warrant tariff rates sufficient to sustain American living standards will prefer the third course that is open: dispensing with the industry and absorbing in other kinds of business all of those now engaged in the woolen industry, or in businesses dependent upon its existence. This implies a satisfaction with two consequences: (1) greater competition for places in the industries in which they are absorbed, with a lowering of wages and salaries therein; (2) less competition in the sale of woolen goods, with eventually increased prices therefor. Dr. Cole does not clearly indicate which of the three courses he thinks best for the national interest; and we think he is not very sure which he ought to advocate. It may, however, be inferred from his article that he is in accord with a dictum of Professor Taussig that "wages in the United States . . . if not caused by the tariff alone, they are at least dependent on it. They are the result of the tariff system in this sense: as they are and where they are, they could not be paid but for that system."

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NOTES AND MEMORANDA

THE GENESIS OF MODERN CAPITALISM [1]

PROFESSOR SOMBART has given us a substantially new book under the guise of a second edition. Only one-tenth of the material of the first edition reappears in this new version of the work, and it is extremely difficult to find this tenth. Published during the war, it failed to receive attention outside of Germany; yet it deserves the careful consideration of economists and historians. Plan, scope, and method have been completely changed: the excessive schematization that marred the previous work has given place to an historical realism that will make the book useful and stimulating to those who disagree with its outstanding positions, and the careful separation of explanation of the categories used from the historical illustrations makes it much easier to vizualize the author's meaning.

Professor Sombart still stands somewhat outside of the main current of academic thought, in Germany no less than in other countries. The consciousness of this measure of isolation obtrudes itself at times, both in his appraisals of the work of other economic historians and in his general remarks about historical literature. One has the sense of a struggle to accomplish something entirely new, and of hopes to impart a new direction to the current of literature on economic history. There is somewhat of the conceit of loneliness in many of the passages, but these ambitions and conceits are by no means without foundation. The discontent is a noble discontent, tho not always gracefully expressed: the ambitions are well

1. Sombart, Werner, Der Moderne Kapitalismus, Zweite neugearbeitete Auflage. 2 Bände, pp. xxvi, 919; x, 585; ix, 564 (589–1155). Duncker & Humblot, München & Leipzig, 1916–17.

conceived and significant progress is made toward their realization in the present version of the work. The first edition stood outside the main current of thought because it was labored and difficult to understand. This present edition stands somewhat apart because it represents genuine progress in the systematic presentation of economic history. The isolation is that of leadership.

Altho the essential doctrine of the book is still largely unchanged, thus justifying the use of the old title, the ideas become clearer because it is now possible to understand their relationship to the work of other writers, notably Schmoller, List, and Bücher. The influence of Marx is less apparent, and, if one may draw inferences from the separate work *Socialism and the Social Movement*, the direct influence of Marx reached its climax in the first edition of *Modern Capitalism*. Sombart lays great stress on the presence in the Marxian writings of both revolutionary and evolutionary doctrines. He feels that Marx never worked out the concept of evolution that he gave to economic history, so that one is tempted to regard the earlier version of *Modern Capitalism* as an attempt to give full expression to the thought of Marx. That version is somewhat spoiled for the non-socialistic reader by the constant insistence upon the ultimate emergence of a socialistic society. The reception of the book undoubtedly made a deep impression upon its author, and the present work is an attempt to give concrete expression to a concept of economic evolution in terms of actual historical process rather than in bare abstractions built up from Marxian principles. New influences have come to the fore in this attempt, notably Schmoller and List. Schmoller had always been an important factor in Sombart's thought, but in this work Schmoller becomes the dominant influence. It is the Schmoller of the essay on the mercantile system (1883), too, rather than the Schmoller of the *Grundriss*. This is, of course, especially consistent with the close reading of List now evident and the explicit attempt to carry on the doctrinal tendencies found by Sombart in List's *National System*. The new book is thus closely rooted in the literature of the subject: it attempts

new things, but only in the sense of addressing itself to old problems with fresh vigor.

The present work is designed to afford a comprehensive view of the evolution of economic life in Europe as a whole since the great revival of the eleventh century. The earlier period is sketched rapidly, but with genuine insight and commanding power of generalization. The narrative increases in compass after the mid-fifteenth century. The two volumes thus far published carry the development down to the beginning of the nineteenth century, leaving the conclusion to a subsequent volume or volumes. Sombart's book on Germany in the nineteenth century (*Die Deutsche Volkswirtschaft im Neunzehnten Jahrhundert*, 1903) affords some insight into the character of the continuing volumes that may be expected. Originally written soon after the completion of the first edition of *Modern Capitalism*, it was intended to embody the essential principles of that work. But Sombart's thought underwent many changes in the course of study of recent conditions, and it is possible that these departures were the beginning of the project now in process of execution on so large a scale. At all events the books should be read together until the special work on Germany is supplanted by the final volume of the new version of *Modern Capitalism*.

The underlying unity of the economic life of Europe is presented by Sombart with more conviction than has yet been shown by any writer of the first importance, and this feature of the book is one of its most important claims upon our attention. Sombart complains with justice of the unfortunate influence of nationalistic limitations upon the work of Levasseur, Cunningham, and Inama-Sternegg. He feels that these scholars have failed in many instances to distinguish properly between constitutional and economic history, and that they have neglected the genuinely economic phenomena. The history of the towns affords the most striking illustration of the difference in point of view. Sombart wishes also to emancipate economic history entirely from the misleading implications of the designations of periods that have become customary in the treatment of political and constitutional history. He there-

fore suggests a series of terms built around the concept of capitalism: the pre-capitalistic period, (*a*) domestic economy, (*b*) craft economy; the early capitalistic period; the dominantly capitalistic period.

The beginnings of the early capitalistic period are assigned in the stricter sense to the mid-thirteenth century, on the ground of the dealings of the Sienese merchants with Papal funds and revenues. Capitalistic modes of trading and capitalistic organization of industry appear in various towns of Italy, Germany, and the Low Countries, but this does not seem to warrant characterization of the period as the first stage in the development of capitalism. The important beginnings of capitalism appear in the latter half of the fifteenth century as the result of the following factors: the discovery of new gold and silver mines in central Europe; the discoveries of America and of the sea route to India; the religious persecutions; the entry of the Germanic peoples into history (*sic*); the completion of the development of the feudal monarchies; the rise of the modern army; advances in industrial technique; perfection of double entry bookkeeping. The formative period of the capitalistic order is presumed to continue until the mid-eighteenth century in England and until the mid-nineteenth century for Europe as a whole.

Sombart is fully justified in the feeling that his term "early capitalistic period" is superior to Schmoller's term, territorial economy, or to Marx's term, the period of manufacture. At the same time, it is not so clear that much is gained as against a series of terms that would be more closely related to political and constitutional history: the medieval period; the early modern period; the modern period. As a basis for the comprehensive treatment of economic history the categories of capitalism are by no means wholly satisfactory. Agrarian problems are not clearly placed. From the social and economic points of view they are at least of coördinate importance with industrial and commercial problems, but in the suggested scheme they are made to appear incidental and unimportant. The colorless designation of the periods in terms of the time sequence alone does not prejudice any of the

problems of interpretation, tho the intervals are distinguished sufficiently for all purposes.

It is, of course, desirable that the presentation of economic history should not be dominated by political and constitutional history, but one must recognize that the relations between these different aspects of social life are so close that there are inevitably genuine correlations among the datings of the major periods. All the lines of demarcation emphasized by Sombart are important in political and constitutional history. Periods of active economic growth and change are inevitably periods of constitutional growth, and political changes are a frequent accompaniment. The emancipation of economic history from undue influence will be accomplished rather by emphasis upon the economic content of the periods than by the use of obtrusively economic terms in characterization. Sombart seems to attribute excessive importance to the naming of the periods.

The stages in the genesis of capitalism are concisely sketched in a notable introductory passage. "I have said," he says, "in one place 'in the beginning is the army' meaning that I see in the modern army the first and most important tool that was formed by this new spirit to accomplish its work. By means of the army was the state created, that first completed manifestation of the new spirit, in which and through which it becomes a power. In order to attain mastery over nature it then seeks to transform technique, and its deep-seated longing for money and power leads it to the deposits of the precious metals which it exploits. These three domains appear as independent fields of activity for the new spirit, it is never lead away from one by its interests in the others" (I, p. 331). . . . "State, technique, and production of the precious metals are the basis of capitalistic development. . . . The state, by its army, creates a great market for capitalism and fills economic life with the spirit of discipline and order. . . . Technique makes production and transport on a large scale, first possible, then necessary. . . . The precious metals influence economic life in many ways: they transform the market in a direction essential to the development of cap-

italism; they heighten the capitalistic spirit by strengthening the desire for gain and perfecting the means of expressing values" (I, p. 332). Then follow in sequence: the development of a wealthy bourgeoisie; changes in consumption; the creation of new productive powers; the capitalistic undertaking. "The demonstration of all this in detail is the aim of the present work" (I, p. 333).

This brief formulation of the thesis of the book brings out clearly a number of essential traits: the emphasis upon the creative power of the state; the conception of capitalism as a spirit or as a manifestation of the will or ingenuity of the people; the attribution of critical importance to the army, to the hoards of precious metals, and to the commercial policies of the state. These ideas are obviously unrelated to the body of classical economic theory and the principles derived from it. The detailed account of all these matters in no wise diminishes the antithesis between Sombart's doctrine and those of the classical school. He is clearly conscious of the difference in view, and it is in this sense that he seems most definitely to continue the work that Schmoller unfortunately began in 1883. Sombart challenges the adequacy of classical thought in the same spirit, tho he recognizes the essential interdependence of history and theory. His position is thus somewhat different from that originally taken by Schmoller, but it is undoubtedly an outgrowth of Schmoller's work. The larger significance of Sombart's book lies in this sharp formulation of the divergent tendencies in economic thought. He leaves us a new dilemma; an antithesis between a liberal system and a restrictive system. These systems of thought must needs involve close interweaving of both theory and history. Sombart presents us with the detail of the interpretation of history based upon the restrictive theory, and indicates the fundamental positions of theory involved. The work of Sombart shows by contrast one element of weakness in the system of liberal thought: it has no systematic body of historical interpretation. The historians who have been in sympathy with such views have paid little attention to the systematic problems that are of fundamental importance in

the new polemic that is so strikingly foreshadowed by Sombart.

In developing the antithesis between his thought and that of the classical school, Sombart recognizes his obligations to the mercantilists. His displays much resentment at the disposition of the classicists to treat them as forerunners of Adam Smith and the physiocrats, contending that they represent distinct systems of thought which have as yet failed of complete expression. He identifies himself with them and says that he will doubtless be classified as a neo-mercantilist. He cites List, Dühring, and Carey as writers who did much to win for mercantilism its true independence. Lest there be any doubt of his meaning we have both a long, balanced antithesis between classical and mercantilistic thought, and a sketch of a mercantilistic system of political economy.

The classic system he deems to be (1) mechanical; (2) individualistic, picturing a society that is dominated by circulation problems — value, price, and exchange; (3) static. The mercantilistic system is (1) organic, dealing with a society conceived as a whole; (2) collectivistic, emphasizing the problem of organized production; (3) dynamic, dealing with a process rather than a condition (II, pp. 915–920). In the detail of this long antithesis there is much that is questionable, especially in regard to the interpretation of the classical economists. Some distinctions and contrasts are certainly overdrawn. But the significant fact is not so much the accuracy of the antithesis as the setting up of this contrast in doctrine. The concluding passage runs as follows. "We will first rightly appreciate the diverse tendencies in economic thought when we accustom ourselves to distinguish two systems of doctrine: the one a mechanistic and static exchange theory, the other an organic and dynamic production theory; one regarding economic life as a condition, the other interpreting economic phenomena in terms of process. . . . The scientific thought originating in the work of the classical school should be called 'Social Economics' to indicate that it has as its subject matter the relations within a stateless society of individuals. One should not on account of this science, or rather this mode of

interpreting social life, forget the other contrasted view — the science of the origins of the wealth of nations, called by List the theory of productive powers. . . . This view may well be designated by the old term 'Political Economy'" (II, p. 920).

There follows a sketch of the essential features of mercantilistic thought under the title "The doctrines of a mercantilistic system of economics." There is first a group of political ideas: the preoccupation with the interest of the state as a whole; a presumption that the power and independence of the state is the supreme concern; recognition that population is the ultimate source of power; the interpretation of the economic life of the state as a functional activity, controlled by the state for its ends. Second is a group of economic ideas: the concept of social productivity, stated by List inadequately and thus in need of further elaboration; the increase of national wealth by the stimulation of maximum production within the country and by advantageous foreign trade; the discovery of capitalism. Both of these last points involve much that is novel. The handling of the problem of foreign trade is quite fresh, but too complex to admit of successful statement in brief compass. The notion of a "discovery" of capitalism is in itself indicative of the novelty of the treatment of that subject. The thesis of the section is that Marx discovered capitalism for science, but that the practical discovery was the work of the mercantilists. They become, therefore, in Sombart's interpretation the driving force behind the whole development of the period, and the formula used by Schmoller in 1883 that mercantilism is state building thus receives a significant extension of meaning in Sombart's present work. The doctrinal positions stated in these passages, too, dominate the whole book, for Sombart shows unusual power in forming the historical material to these patterns. Regardless of one's opinion of the theory, the quality of the artistic accomplishment commands admiration.

The interpretation of economic development in this work is, therefore, diametrically opposed at every important point to the thought that has dominated the social sciences in

France, England, and the United States. Systematic writing in economic history has long been influenced obscurely by doctrinal positions that diverge from the liberal thought: through contacts with socialistic thought, in the work of Bücher and Hobson; through contacts with mercantilism in the case of Schmoller. Unfortunately, the theoretical implications of these interpretations of economic history were not clearly enough revealed adequately to challenge the attention of writers in France, England, and the United States. It would seem that there could no longer be any doubt of the need of meeting the challenge so vigorously made by this commanding work of Sombart. Historians who are in sympathy with the liberal economic doctrine cannot afford to leave the writing of systematic treatises to authors whose premises are fundamentally different. It is impossible to use in elementary instruction generalizations that are not consistent with our own thought, and even if we find realistic methods most useful in monographic work and in general presentation of historical material we must recognize the need of systematic interpretation in class work and in texts. It is the belief of the writer that there is no fundamental position of Sombart that cannot be significantly challenged from the liberal point of view. The development of the period can be presented in terms that are as definitely consistent with the classical theory as Sombart's interpretation is inconsistent with those views. The relative validity of the two points of view must turn primarily upon the quality of the analysis in the domain of pure theory.

It is obviously impossible to present here a detailed criticism of Sombart's interpretation. It must suffice to comment briefly upon the fundamental issue between the two schools of thought. The mercantilistic system presumes that the destiny of the state and the economic welfare of society rests primarily with the rulers and the people; a little more largely with the rulers than with the people, but depending primarily upon these human factors and only secondarily upon environmental factors. The doctrine is an application of the principles of the freedom of the will. These features of the

system of thought appear very clearly in Sombart, both in *Modern Capitalism* and in the *Economic Development of Germany in the Nineteenth Century*. The liberal doctrine is after all a theory of qualified determinism; an analysis of social growth in which the form and structure of social life are presumed to be the result of progressive adaptations to the environment, subject to natural laws and capable of rational explanation because the phenomena are the orderly manifestations of an evolutionary process.

It is difficult to feel that Sombart is consistent in his treatment of this issue. His formal statements are all frankly mercantilistic: the controlling factors are the will of the state and the quality of the people. Capitalism is said to be the invention of the Italians, carried to fuller perfection by the northern races because of the superior endowment of those peoples in connection with the demands of the capitalistic system.[1] Mercantilism creates both the state and the system of modern capitalism. But natural resources are recognized as controlling factors in many features of economic growth, so that one is sorely puzzled by the relative importance of what is "primary" and what is "secondary." The "secondary" factors seem to dominate conditions at crucial points. To one of the opposite faith, these passages are a clear index of the validity of the liberal position. The mercantilist position is weakened, if not destroyed, by the inconsistency between its principles and the detail of its analysis.

The concept of evolution is also involved in this issue between free will and qualified determinism. It is difficult to reconcile the conception of freedom of the will with an evolutionary process: either the will loses its freedom and itself becomes conditioned by circumstance, or there is merely a sucession of capricious events that cannot with propriety be termed an evolutionary process. Sombart's work illustrates this difficulty to perfection. It is a presentation of sequences of events, but the series of happenings bears little relationship to any evolutionary process in the sense that the term has come to possess at the hands of the biologists. The driving

1. Deutsche Volkswirtschaft im 19 Jahrhundert, pp. 116–127.

force in Sombart's scheme comes from the outside: we think of evolution rather as a process that is an expression of inner necessity.

The compass of the present paper prohibits any adequate discussion of the many items and chapters that are not deeply involved in the larger matters of principle. The sketch of the rise of the towns, most of the discussion of the production and distribution of the precious metals, much of the discussion of craftsmanship, will prove stimulating and useful to all who are concerned with the history of the period. These passages are a permanent contribution to the literature of the subject. The work should, therefore, bring to its author generous recognition from all sides, whether he is regarded as a brilliant advocate of the "true" doctrine, or as one of the most talented antagonists of liberal thought.

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INDEX NUMBERS OF FOREIGN EXCHANGE

INTERPRETATION has always lagged far behind the collection of statistical data, altho nothing conduces so much to effective collection as a clear appreciation of the significance of the data to be collected. Recently the knowledge of elementary statistical devices has spread rapidly without a corresponding extension of the more exacting art of interpretation. Hence one finds numerous instances of laborious effort expended upon the elaboration of averages, index numbers, and coefficients, where more careful preliminary consideration of the results would have indicated the futility of applying refined methods to such material or the necessity of employing a quite different procedure. Moreover, so uncritical are most readers in their acceptance of statistics, that figures well-nigh meaningless, or misleading if made the

basis of inferences, are given wide recognition and currency without being interpreted by their authors or any one else. Such practices tend to encourage the superficially minded in a kind of knowing ignorance, and to discredit statistical methods among thoughtful laymen.

A pertinent instance of these tendencies, the writer believes, is afforded by the current index numbers of foreign exchange. Early in 1921 several European journals — the London *Statist*, the *Frankfurter Zeitung*, the Norwegian *Farmand*, and the Swedish official *Kommersiella Meddelanden* — published computations of index numbers of their respective exchanges. In July, 1921, the *Federal Reserve Bulletin* set forth, with admirable lucidity and completeness, these various indexes and the methods used in their calculation; and gave its endorsement to the idea by working out a foreign exchange index for the United States, which it presents month by month in table and chart form.

The nature of these indexes is easily understood. Each is an average of exchange rates quoted at a given center, on the leading countries with which the first country has trade relations; quoted rates on each center first being expressed as percentages of pre-war gold parity, and then (in most instances) weighted according to the volume of trade with each of these countries. The variations in method relate chiefly to the number of exchange rates utilized, the type of average (arithmetic or geometric) employed, and the determination of weights.

Alternatively, the index numbers may be expressed, as the British index uniformly is expressed, as the average "exchange value" of the national currency abroad, this being at a premium when the average foreign exchange is at a discount, and vice versa.

Those interested in the methods of calculation will be abundantly satisfied, but those who, like the present writer, are interested rather in the meaning and utilization of the indexes will find strangely little aid either in the *Federal Reserve Bulletin* article or in the periodicals which gave birth to this new species of index. In broad terms, indeed, the expec-

tations are mentioned. Thus, the *Statist* asserts that "the index numbers represent the collective value of the £ abroad expressed as a percentage of its collective value at the old parities in terms of the foreign currencies," and expresses the hope "that this index number will add to the statistical information at the disposal of our readers by enabling them to discern the general trend of the value of our currency abroad amidst the multitude of daily exchange fluctuations." [1] Similarly the *Federal Reserve Bulletin* refers to the index numbers as "measuring the general trend in exchange values of foreign currencies," as "indicating the direction and amount of movement in their respective national currencies as related to the collective currencies of other countries," as assisting in "ascertaining the general position abroad of the currency of a country" — so difficult "in the midst of the daily fluctuations and disturbances ruling in the exchange market." "Studied in conjunction with the index numbers for wholesale prices of commodities the index of foreign exchange rates affords comparison of the changes which occur both in the internal and external value of a country's *currency and gives a perspective* of its purchasing power both at home and abroad." It is asserted that, despite admitted limitations, "the index numbers, nevertheless, are useful and of interest in analyzing the effects of the present deflation process on the purchasing power of currencies abroad." [2]

Unfortunately, many of these expressions are themselves vague, and the *Statist* has ventured rarely and slightly,[3] and the *Federal Reserve Bulletin* not at all, to draw the inferences and elucidate the conclusions to which a study of the course of the index might be supposed to lead.[4] Publications quoting the indexes have been equally silent. Yet few readers are competent to attempt this task of interpretation without considerable guidance and assistance.

1. Statist, March 5, 1921, pp. 382, 383.
2. Federal Reserve Bulletin, July, 1921, pp. 794–796.
3. Statist, May 14, 1921, p. 816; Dec. 12, 1921, pp. 888, 889.
4. Last August the writer offered the suggestion, to the editors of the Bulletin, that space be given to interpreting the index for the United States; but the brief comment which accompanies the monthly chart hardly supplies the want.

The present writer, after making this attempt, cannot excape the conclusion that the new index numbers add nothing to our knowledge, are theoretically unsound, and tend to be misleading rather than helpful. If this be so, the whole series of puzzling questions as to what weights to use, how often to adjust them, how to allow for factors other than recorded trade, whether to use the geometric or the arithmetic average, and so on, are superfluous. If, on the contrary, the index numbers are soundly constructed and of practical utility in spite of technical deficiencies, their proponents should interpret them to casual or skeptical readers.

The practical utility of the foreign exchange index may first be questioned. The business man is primarily interested in prices of particular commodities which he buys or sells, at home or abroad. He is concerned with particular exchange rates, and their tendency over a period, because they affect his actual outlays or receipts, and his potential market or source of supply. The exceptional business man further interests himself in the course of the level of commodity prices in general, at home and perhaps also in certain countries abroad, principally as they indicate the stage of business prosperity or depression, or suggest, in connection with other facts, possible forthcoming events. But what use can he make of an average of the wholesale price indices of a number of countries, or with an average of foreign exchange quotations, in which the particular facts which concern him are submerged and obscured, while the significance of the averages is not revealed?

To the economist, no less, the utility of the indexes is doubtful. All will sympathize with the desire to find some significant figures which will be easier of comprehension and utilization than the multitude of daily quotations. Here lies the advantage of selecting one rate, out of the many quoted during a day, at one given center on another, as typical for that day (e. g., the noon buying cable rate), and of computing weekly or monthly averages of these typical rates, which have been a very useful by-product of the computation of the index numbers. These enable one readily to distinguish the

general course, day by day and month by month, of a given exchange rate. It is the next step in the computation, the combining of a number of monthly average rates on several centers, that is of doubtful value and validity. Is this more useful than taking, by an elaborate photographic process, a series of composite pictures of the commodities landed each month at the port of New York? Can one correctly speak of the "collective value" of a currency abroad, or of a general trend, in exchange values of foreign currencies? These questions raise certain theoretical considerations.

The phrase "collective value of our currency abroad" implies a purchasing power over *commodities* abroad. But the index number certainly gives no accurate indication of changes in such purchasing power. Because the *Federal Reserve Bulletin* index in a certain month is 50 (with 1913 as 100), it cannot be inferred that a dollar will buy twice as much in foreign commodities as it bought in 1913. It is nearly as dangerous to draw such inferences from changes from month to month or from year to year. Even an individual exchange rate gives no reliable indication of purchasing power over commodities, in a single foreign country, for changes in price levels are constantly taking place. Broadly speaking, price changes, subject to a certain lag, tend to offset more or less completely the influence of changes in exchange rates. But the experience of recent years shows how dangerous it is to generalize about the relation between price changes and exchange fluctuations. The "disaccord" between prices and exchange rates has been a particularly marked phenomenon in the extraordinary currency events since the war.

No, the index numbers merely indicate a kind of average purchasing power over foreign currencies, which in turn are used, at various price levels, to procure goods, services or securities. To get at a "collective value" of a currency abroad, it would be necessary to go a step further — to utilize the index number of foreign exchange in conjunction with a corresponding average of price levels in different countries, much as to get the purchasing power of a dollar

over a single commodity abroad, one must multiply the foreign price of that commodity by the exchange rate. While such a procedure might in theory be defended, the lack of comparable index numbers for the various countries of interest would vitiate the effort, even if the attempt was not rendered useless by the remoteness from reality in the figures to be obtained.

But is it not an average purchasing power merely over foreign *currencies* significant? This is extremely doubtful. Currencies are valued only as a medium of exchange. An average which submerges their significance as power in exchange over commodities obscures their very *raison d'être*. More important still, it must be emphasized that in these days, with the well-nigh universal suspension of the gold standard, each foreign currency is a unique commodity in a sense which was quite untrue when all bore a fixed relation to gold, a common standard. Pre-war parities, as Professor Cassel rightly insists, are for the present of historical interest only, except as they are a convenient base for expression of current exchange rates and a possible ideal for future attainment. These unique commodities are subject to innumerable influences — some purely domestic, some common to a few nations, a few common to all, which affect their respective values without being subject to the limiting factors which exist when gold redemption is practiced and gold movements are freely permitted, or to limits comparable to those which operate upon the several commodity prices which make up the price level of a single country. Exchange rates today are essentially unhomogeneous commodities which cannot safely be averaged.

No one has yet attempted to get an average weight of animals by averaging the weights of an elephant, a steer, a dog, a mouse, and a flea, even with an elaborate system of weighting based upon the number of each estimated to be in existence or by extending the list of animals so as to be fully representative. Even the *Frankfurter Zeitung*, with its remarkable zeal for index numbers, has not yet attempted to get an average price in marks of American brick, Swiss moun-

tain scenery, Belgian university training, and British mine labor. The foreign exchange index numbers, while apparently less grotesque, are hardly sounder in theory and hardly more illuminating. There is the nearest approach to justification, perhaps, for the American index number, which reflects an average gold value of the heterogeneous foreign currencies. The foreign index numbers have the further defect that the very unit unemployed for measurement varies even more capriciously than the value of gold — as if, in the first illustration above, one made measurements at monthly intervals with a kilogram itself of varying weight. But even the American index number seems to defy interpretation because quantities essentially unhomogeneous are combined into a weighted average.

The *Statist* believes that the rise in its British index number from February, 1920 to March, 1921 indicated "the effects of the deflation campaign on the purchasing power of the pound sterling, both at home and abroad." [5] Now, the British *price* index numbers indicate *among other things* the effect of the deflation on the domestic purchasing power of the pound, and this they do more adequately than could any foreign exchange index. As to the purchasing power abroad, the exchange index alone, as we have seen, gives no indication of purchasing power over foreign commodities. It is true that the British index number is in part determined by currency and credit policies at home and abroad, but these influences partially offset one another and many other factors also operate upon it. The resultant of so many interacting and often counterbalancing forces cannot be said to give any clear indication of the effects of certain forces among the many.

If one really wishes to discern the trend of foreign exchange as viewed from a particular center, a clear picture in small space may easily be obtained by plotting, on a logarithmic or ratio scale, the monthly average rates on various centers ex-

5. The British index number, as noted above, is designed to express directly the purchasing power of the pound sterling over foreign currencies. Hence it rises when exchanges move in favor of London.

pressed for convenience in percentages of pre-war parity. On such a chart the relative changes stand out clearly, enabling one to distinguish the significant variations from country to country and to group the countries according to common tendencies. Such a chart or charts will serve most of the purposes for which the index of foreign exchange has been designed without being open to the criticism which it deserves. For example, they reveal, far more clearly than the index numbers, significant seasonal movements in the exchanges.

The objection to the elaboration of such index numbers is not alone to the waste of labor which they entail in preparation and in amateur efforts at interpretation, and to the discredit which they reflect upon useful statistical devices, but to the unsound reactions they imply or support. For example, the index numbers of foreign exchange attach an unwarranted significance to pre-war parities, which are already all too highly regarded. They imply that foreign currencies are really of a common species, whereas they are today widely diverse species. They lend support to the widespread delusion that foreign currencies had *equal* purchasing power under pre-war (normal) exchange rates and have an abnormally *high* purchasing power over commodities in countries with depreciated exchanges. These are subtle dangers, fortunately less serious because so few take the trouble to draw any inferences whatever from the computed indices.

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